European Optical Society

Coherence for Europe ®

EOS Topical Meetings at Capri

4th EOS Topical Meeting on Optical Microsystems (OμS'11)

2nd EOS Topical Meeting on Lasers (ETML'11)

26 - 28 September 2011, Capri, Italy

ADVANCE PROGRAMME

Organized in cooperation with the Italian and Swedish Branch of the EOS

Svenska OptikSällskapet
Swedish Optical Society
Branch of the European Optical Society

Società Italiana di Ottica e Fotonica

Sponsors

HAMAMATSU
PHOTON IS OUR BUSINESS

AMERICAN ELEMENTS

Media Partner

Springer
science+business media

European Optical Society

Annual Meeting

EOSAM 2012 moves to Aberdeen

Aberdeen Exhibition and Conference Centre, Scotland (UK) | 25 - 28 September 2012

Present your research in the energy capital of Europe!

Topical Meetings

TOM 1 Biophotonics
TOM 2 tba
TOM 3 Nanophotonics
TOM 4 Micro-Optics
TOM 5 Organic Photonics
TOM 6 Nonlinear Optics
TOM 7 „Blue Photonics“ - Optics in the Sea

Workshop

Continuing education:
Short courses for industry

Exhibition

Special focus on „blue photonics“

Sign up for updates at www.myeos.org/events/eosam2012

Contact: European Optical Society (EOS) · **Petra Bindig** (Senior Project Manager) · **Pamela Klages** (Junior Event Manager)
Hollerithallee 8 · 30419 Hannover, Gemany · Phone: +49 (0)511 277-2678 · Fax: +49 (0)511 2788 119
Email: **capri@myeos.org** · URL: **www.myeos.org/events/capri2011**

ABOUT EOS

History

The European Optical Society (EOS) was founded in 1991. The purpose of the society is to contribute to progress in optics and related sciences, and to promote their applications at the European and international levels, by bringing together individuals and legal entities involved in these disciplines and their applications. EOS is a not for profit organisation and serves as the joint forum for all individuals, companies, organisations, educational institutions, and learned and professional societies, who recognise the opportunity and challenge that a common European base provides for the development of optics in its broadest sense. EOS organises recognized topical meetings, conferences, workshops and other events, publishes journals and is an important player on the European level. 22 national optical societies and a great number of individuals and companies are currently members of EOS (www.myeos.org).

EOS membership - Join us and...

- Be a part of the umbrella organisation of the national optical societies in Europe
- Connect with colleagues from all over Europe and beyond
- Contribute to strengthening Europe's future in optics and photonics
- Stay up-to-date about European Research Funding
- Benefit from discounts on EOS events and publications in the EOS online journal JEOS:RP
- Receive the Annual EOS Member Directory - your guide to the European optics and photonics community

Activities

- Organisation of topical meetings, workshops and conferences, and endorsement of other scientific events
- Operation of a virtual platform for the European optics and photonics community at www.myeos.org
- Focus Groups and Student Clubs (as of 2011)
- Publication of JEOS:RP, the electronic Journal of the European Optical Society - Rapid Publications (www.jeos.org)
- Bi-monthly electronic member newsletter
- Representation of the optics and photonics community on the European level (Photonics21 Technology Platform)
- Annual award of the EOS Prize

Membership modes and fees

Individual membership

Annual fee: 50 €

Individual membership through an EOS Branch

Every member of an EOS Branch is automatically an individual member of the EOS, too, with all benefits.
Annual fee: included in the Branch membership fee

Student membership

Annual fee: 10 €

Associate membership through an EOS Affiliated Society

Every member of an EOS Affiliated Society is automatically an associate member of the EOS, too, but with limited benefits.
Annual fee: included in the Affiliated Society membership fee

Upgrade for associate members

Upgrade to an individual EOS membership with full benefits.
Annual fee: 12.50 €

Corporate membership through an EOS Branch or Affiliated Society

Annual fee: 200 €

Direct corporate membership

Annual fee: 300 €

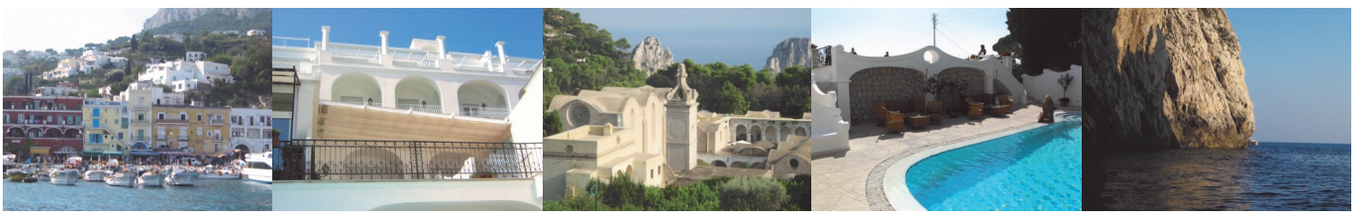
How to join?

To join the EOS as an individual, student or corporate member, please see our website at **www.myeos.org/members**.

Questions?

Please contact the EOS office at **info@myeos.org**.

VENUE



Capri is a beautiful and picturesque island in the Gulf of Naples that has been attracting countless visitors for thousands of years. Its mild climate, the numerous monuments and island highlights and last but not least the excellent Italian cuisine and wine culture make Capri a perfect location for high-quality EOS Topical Meetings in an enjoyable Mediterranean atmosphere. See also: www.capri.it

The 2nd EOS Topical Meeting on Lasers (ETML'11) takes place at the:

Hotel La Residenza
Via Federico Serena, 22
80073 Capri (NA), Italy

phone +39 081 837 0833
fax +39 081 837 7564

info@laresidenzacapri.com
www.laresidenzacapri.com

The 4th EOS Topical Meeting on Optical Microsystems (OμS'11) takes place at the:

Palazzo dei Congressi di Capri
Via Sella Orta 3
80073 Capri (NA), Italy

phone +39 081 837 5841
fax +39 081 837 6046

www.caprimed.it/sede-capri.htm
www.palazzocongressicapri.com

GETTING THERE

BY PLANE

The next aiport to Capri is the *Airoporto Internazionale di Napoli* that can be reached from various international airports in the world.

GETTING FROM THE AIPORT TO THE COAST

To get from Naples Airport to the ports serving Capri, the most convenient way of getting there would be taking the *AliBus*. The station is situated right in front of the airport. The AliBus connects 'Naples International Airport' with the Port Terminal at 'Piazza Municipio' (the travelling time is about 30 minutes), that is located just a few steps away from 'Molo Beverello'.

→ *You can purchase your ticket for the AliBus on board, it costs approximately 3 EUR, is valid for 90 minutes and can be used on other city transport services (departures of the AliBus: every 20 minutes from 6.30 to 23.30).*

Alternatively, you can take the *bus 3S* that runs from 6.00 a.m. up to 23.00 and leaves approx. every 30 minutes. The bus makes all the normal stops along its route and it passes near the Central Station and near the harbour.

→ *The ticket is the standard one for all the urban lines, called 'Unico Napoli', which in its base version costs 1 EUR and lasts 90 minutes from its first use. It is not possible to buy it on the bus, but it is for sale inside the airport.*

Moreover, you may also take a taxi or a rental car to get to the ports serving Capri.

→ *Several hotels do also offer to organize the travel arrangements for their guests to and from the island. For additional information and costs thereby incurred, please contact the hotels directly.*

AliBus
Right in front of the airport is the AliBus station
→ Airport of Naples
www.portal.gesac.it/portal/page/portal/internet
→ Getting to Capri
www.capri.com/en/come-arrivare
→ AliBus
www.gesac.it/en/alibus.html

GETTING FROM THE COAST OF NAPLES TO CAPRI

You can reach Capri by ferry or by hydrofoil from Naples or Sorrento.

From Naples
From 'Molo Beverello' you may take the hydrofoil to the island of Capri (the journey takes about 40 minutes and costs approximately 17 EUR) or the ferry from 'Calata di Massa' (the journey takes about 80 minutes and costs approximately 11 EUR). A shuttle service connects 'Molo Beverello' and 'Calata Porta di Massa'.
The Capri.net island guide recommends to take the hydrofoil from 'Molo Beverello' because of the greater frequency of

GETTING THERE (continued)

departures and larger selection of hydrofoils.

From Sorrento
The ferry takes about 40 minutes and costs about 13 EUR, while the hydrofoil takes about 20 minutes and costs about 15 EUR.

→ There will be a small fee for large baggage brought on board. The baggage fee is paid at the time of ticket purchase, and you will be given a special ticket for each bag.

→ Fees may vary according to the operating company.

→ The ferry schedule is available at
www.capri.com/en/ferry-schedule

GETTING AROUND AT CAPRI

Getting around at Capri
www.capri.com/en/come-muoversi

By car
Please note that during the tourist season (generally from Easter to the first weekend of November) non-resident vehicles are not allowed to circulate on the island of Capri. It is advisable to leave cars in one of the attended car parks close to the points of embarkation.

DIRECTIONS BETWEEN THE TWO LOCATIONS

From Palazzo dei Congressi to Hotel La Residenza:
You start at Via Sella Orta in Capri and head towards Via Vittorio Emanuele. Leave Via Sella Orta and turn left into Via Vittorio Emanuele. Leave Via Vittorio Emanuele and head straightforward onto Via Federico Serena. [about 5 minutes]

From Hotel La Residenza to Palazzo dei Congressi:
You start at Via Sella Orta in Capri and head towards Via Vittorio Emanuele. Leave Via Sella Orta and turn left into Via Vittorio Emanuele. Leave Via Vittorio Emanuele and head straightforward onto Via Federico Serena. Leave Via Vittorio Emanuele and turn right into Via Sella Orto.

FURTHER INFORMATION

→ Directions to Capri island (by plane, car or train)
www.capritourism.com/en/how-to-reach-capri

→ Map of the island
www.capri.net/en/map

→ Tourist information
www.capritourism.com

NOTES

ACCOMODATION

Please note that the room rates as well as the information on internet facilities (internet plugs, Wi-fi etc.) are taken from the homepages of the listed hotels. Rates may vary from the prices listed below (e.g. during fairs) according to room availability and reservation date. Please contact the hotel directly to make your reservation.

Hotel Villa Sarah***
Prices: 95 - 225 € (incl. breakfast)
Address: Via Tiberio, 3/a, 80073 Capri (NA), IT
URL: www.villasarahcapri.com
Contact: www.villasarahcapri.com/en/info-request
Phone: +39 (0)81 8377 817
Fax: +39 (0)81 8377 215
Remarks: no information about internet connection available

Hotel Bristol*
Prices: 170 - 300 €
Address: Via Marina Grande, 217, 80073 Capri (NA), IT
URL: www.hotelbristolcapri.com
E-Mail: info@hotelbristolcapri.com
Phone: +38 (0)81 8376 144
Fax: +39 (0)81 8376 150
Remarks: Wi-Fi available for a fee

Capri Hotel Canasta*
Prices: 120 - 250 € (incl. breakfast)
Address: Via Campo di Teste, 6, 80073 Capri (NA), IT
URL: www.hotel-canasta.com
E-Mail: info@hotel-canasta.com
Phone: +39 (0)81 8370 561
Fax: +39 (0)81 8376 675
Remarks: Free Wi-Fi connection in rooms and common areas

La Piscina de La Vega*
Prices: 160 - 420 € (incl. breakfast)
Address: Via Occhio Marino, 10, 80073 Capri (NA), IT
URL: www.hotellavega.it
E-Mail: info@lavega.it
Phone: +39 (0)81 8370 481
Fax: +39 (0)81 8370 342
Remarks: no information about internet connection available

Hotel La Certosella*
Prices: 200 - 300 € (incl. breakfast)
Address: Via Tragara, 13/15, 80073 Capri (NA), IT
URL: www.hotelcertosella.com
E-Mail: info@hotelcertosella.com
Phone: +39 (0)81 8370 713
Fax: +39 (0)81 8376 113
Remarks: Free Wi-Fi connection in the hall

La Residenza**
Prices: 180 - 1.010 € (incl. breakfast)
Address: Via Federico Serena, 22, 80073 Capri (NA), IT
URL: www.laresidenzacapri.com
E-Mail: info@laresidenzacapri.com
Phone: +39 (0)81 8370 833
Fax: +39 (0)81 8377 564
Remarks: Free Wi-Fi connection in the common areas

Best Western Hotel Syrene**
Prices: 173 - 241 €
Address: Via Camerelle 51, 80073 Capri (NA), IT
URL: www.hotelsyrene.com
E-Mail: syrene.na@bestwestern.it
Phone: +39 (0)81 8370 102/522
Fax: +39 (0)81 8370 957
Remarks: Free Wi-Fi connection in hall

Hotel Capri**
Prices: 140 - 600 €
Address: Via Roma 71, 80073 Capri (NA), IT
URL: www.htlcapri.it
E-Mail: h.capri@capri.it
Phone: +39 081 8370 003 / 8375 207
Fax: +39 081 8378 913
Remarks: Free Wi-Fi connection in rooms and common areas

Hotel Flora**
Prices: 200 - 310 € (incl. breakfast)
Address: Via Serena Federico, 80073 Capri (NA), IT
URL: floracapri.com
E-Mail: info@floracapri.com
Phone: + 39 (0)81 8370 211
Fax: +39 (0)81 8378 949
Remarks: Wi-Fi connection

Hotel A Paziella**
Prices: 119 - 350 € (incl. breakfast)
Address: Via Fuorlovado, 36, 80073 Capri (NA), IT
URL: www.apaziella.com
E-Mail: info@apaziella.com
Phone: +39 (0)81 8370 044
Fax: +39 (0)81 8370 085
Remarks: Wi-Fi zone in the hall, internet point

Hotel La Palma**
Prices: 335 - 375 €
Adress: Via Vittorio Emanuele, 39, 80073 Capri (NA), IT
URL: www.lapalma-capri.com/index-2.html
E-Mail: info@lapalma-capri.com
Phone: +39 (0)81 8370 133
Fax: +39 (0)81 8376 966
Remarks: Free Wi-Fi connection in the hall

Hotel Luna S.R.L.**
Prices: 210 - 390 € (incl. breakfast)
Adress: Viale Matteotti, 3, 80073 Capri (NA), IT
URL: www.lunahotel.com/en/index
E-Mail: luna@capri.it
Phone: +39 (0)81 8370 433
Fax: +39 (0)81 8377 459
Remarks: Wi-Fi available for a fee

Hotel La Floridiana**
Prices: 90 - 850 € (incl. breakfast)
Address: Via Campo di Teste 16, 80073 Capri (NA), IT
URL: www.lafloridiana-capri.com
E-Mail: info@lafloridiana-capri.com
Phone: +39 (0)81 8370 166
Fax: +39 (0)81 8370 434
Remarks: Wi-Fi Internet Point

Hotel Gatto Bianco****
Prices: 170 - 530 € (incl. breakfast)
Address: Via V. Emanuele, 32, 80073 Capri (NA), IT
URL: www.gattobianco-capri.com
E-Mail: h.gattobianco@capri.it
Phone: +39 (0)81 8370 446
Fax: +39 (0)81 8378 060
Remarks: Internet Wi-Fi spot

Hotel La Minerva****
Prices: 80 - 450 € (incl. breakfast)
Address: Via Occhio Marino, 8, 80073 Capri (NA), IT
URL: www.laminervacapri.com
E-Mail: laminerva@capri.it
Phone: +39 (0)81 8377 067
Fax: +39 (0)81 8375 221
Remarks: Free Wi-Fi connection in rooms and common areas

Hotel della Piccola Marina****
Prices: 180 - 380 € (incl. breakfast)
Address: Via Mulo, 14/16, 80073 Capri (NA), IT
URL: www.hoteldellapiccolamarina.it/
E-Mail: info@hoteldellapiccolamarina.it
Phone: +39 (0)81 8379 642
Fax: +39 (0)81 8378 483
Remarks: Free Wi-Fi in most of the rooms
and free internet access point in the hall

Hotel Excelsior Parco****
Prices: 170 - 330 € (incl. breakfast)
Address: Via Provinciale Marina Grande, 179
80073 Capri (NA), IT
URL: www.excelsiorparco.com/
E-Mail: info@excelsiorparco.com
Phone: +39 (0)81 8379 671
Fax: +39 (0)81 8376 973 / +39 (0)81 1930 8555
Remarks: Free Wi-Fi in the rooms

Hotel Punta Tragara*****
Prices: 550 - 2750 €
Address: Via Tragara, 57, 80073 Capri (NA), IT
URL: www.hoteltragara.com/eng/hotel.htm
E-Mail: info@hoteltragara.it
Phone: +39 (0)81 8370 844
Fax: +39 (0)81 8377 790
Remarks: Free Wi-Fi connection in rooms and common areas

Villa Marina Hotel & Spa*****
Prices: 450 - 1550 € (incl. breakfast)
Address: Via Provinciale Marina Grande 191,
80073 Capri (NA), IT
URL: www.villamarinacapri.com
E-Mail: reservations@villamarinacapri.com
Phone: +39 (0)81 8376 630
Fax: +39 (0)81 8374 079
Remarks: Internet connection available in rooms and suites

La Scalinatella*****
Prices: 450 - 750 € (incl. breakfast)
Address: Via Tragara, 8, 80073 Capri (NA), IT
URL: www.scalinatella.com
E-Mail: info@scalinatella.com
Phone: +39 (0)81 8370 633
Fax: +39 (0)81 8378 291
Remarks: Wi-Fi internet connection is included in the room rates

Casa Morgano*****
Prices: 280 - 650 € (incl. breakfast)
Address: Via Tragaro, 6, 6 - Capri (NA), IT
URL: www.casamorgano.com
E-Mail: info@casamorgano.com
Phone: +39 (0)81 8370 158
Fax: +39 (0)81 8370 681
Remarks: Wi-fi internet connection is included in the room rates

JW Marriott. Capri Tiberio Palace Resort & Spa***deluxe**
Prices: 350 - 3300 €
Address: Via Croce 11-14, 80073 Capri (NA), IT
URL: www.tiberiopalace.com
E-Mail: info@tiberiopalace.com
Phone: +39 (0)81 9787 111
Remarks: ADSL line - Free internet

BED & BREAKFASTS
Aiano Bed & Breakfast
Prices: Single room: 65 - 90 €
Double room: 100 - 130 €
Triple room: 130 - 180 €
(incl. breakfast)
Address: Via Aiano di Sopra, 10, 80073 Capri (NA), IT
URL: www.capri.net/en/c/aiano
E-Mail: aiano@capri.it
Phone: +39 (0)81 8377 878
Cell: +39 (0)329 1115 749
Remarks: Wireless internet

Il Portico
Prices: Double room: 80 - 170 €
Triple room: 110 - 200 €
Address: Via Truglio, 1/c, 80073 Capri (NA), IT
URL: www.ilporticocapri.com/EN/index.html
Phone: +39 (0)81 837 0523
Fax: +39 (0)81 0112 057
Cell: +39 (0)338 182 8700
Remarks: Wifi internet connection

HOSTEL
La Reginella**
Prices: Single room: 110 - 120 €
Double room: 65 - 85 €
Address: Via Matermania, 36, Capri (NA), IT
URL: http://www.hostelworld.com/hosteldetails.php/La-Reginella/Capri/38533
E-Mail: info@hotellareginella.com
Phone: +39 (0)81 8370 500
Fax: +39 (0)81 8379 126
Remarks: Internet access

Further accomodation facilities in Capri are available at:
www.capritourism.com/en/accommodation

A list of hostels in Capri can be found at:
www.hostelworld.com

INFORMATION FOR AUTHORS AND ATTENDEES

ORAL PRESENTATIONS

Time slots: Presenting authors are allotted 15 minutes (12 minutes presentation plus 3 minutes for discussion). Please plan your presentation accordingly to meet the 15 minute maximum.

Presentation upload: Speakers are requested to upload their presentation to the computer in the meeting room well in advance to their talk.

Presentation format: Please bring your presentation on a USB mass storage, CD-ROM or DVD and include all video files. File formats: ppt, pptx and pdf. A Windows-based presentation computer will be provided.

For Mac users: To make sure your presentation is displayed correctly, please:
- bring your presentation as pdf-file with fonts embedded or
- restrict yourself to Arial/Times New Roman (not Times)/Courier New (not Courier)/Symbol/Windings when creating your ppt- or pptx-file.

Technical equipment: All technical equipment (presentation computer, video projector, sound system, laser pointer) will be available on-site. It is also possible to use your personal laptop.

POSTER PRESENTATIONS

Poster authors are requested to be present at their posters during the official poster session. Please **prepare and print** your poster in advance to the conference. Poster set-up and removal is in the responsibility of the authors. Any posters left on the boards at the close of the poster session will be discarded. Poster numbers will be displayed on the poster boards to show authors where to place their poster.
The posters should have a size of DIN A1 (594 x 841 mm) or DIN A0 (841 x 1189 mm) preferably in a portrait format (not landscape format). Double sided tape and similar pads will be provided by the organizer. The size of the poster boards is 90 cm (width) x 200 cm (height).
The official poster session will be held on Monday 26th of September at 19.15 at the hotel la Residenza together with the welcome reception.

EOS REGISTRATION DESK

The EOS registration desk **for both meetings - Optical Microsystems (OMS'11) and Lasers (ETML'11) -** is located at the **Palazzo dei Congressi,** Via Sello Orta, 3, Capri, Italy. Please collect your material on **Sunday, 25th of September from 13:00-18:00** at the Palazzo dei Congressi.

On-site registration hours

Sunday, 25 September	13:00-18:00
Monday, 26 September	08:00-13:00
	15:30-17:15
Tuesday, 27 September	09:00-13:00
	15:30-19:00
Wednesday, 28 September	09:00-13:00

Information / Receipts / Confirmation of attendance / Cash payment

Attendees requiring a payment receipt or confirmation of attendance may obtain these documents onsite at the EOS registration desk.

Attendees paying by cash are requested to have the exact change ready in Euro.

REGISTRATION & FEES

At least one author of an accepted presentation is requested to register properly in advance to the conference.
The full-time-registration for OMS'11 and ETML'11 includes admission to both Topical Meetings, a digest CD-ROM with the complete volume of accepted abstracts of both Topical Meetings and lunches on the 26 and 27 September.

Registration category	**Late/on-site fee** (from 13 Sept.)	
	incl. 19 % VAT	**excl. VAT***
Early-bird registration for members	520 €	436.97 €
Early-bird registration for non-members	570 €	478.99 €
Early-bird registration for student members	360 €	302.52 €
Early-bird registration for student non-members	370 €	310.92 €
Early-bird registration for one-day	330 €	277.31 €

* PLEASE NOTE: Registrations from companies and non-university research institutes registered in EU countries (except Germany) are exempted from VAT, **if VAT no. is given.**

JOINT SESSIONS

There will be two joint sessions of the topical meetings Optical Microsystems (OMS'11) and Lasers (ETML'11).
The joint session on *Terahertz* will be taking place on Monday, 26 September, 10:00-12:45 at Sala Auditorium, Palazzo dei Congressi.
The joint session on *Organic and nano lasers* will be taking place on Monday, 26 September, 12:45-17:00 at Sala Auditorium, Palazzo dei Congressi.

EOS CONFERENCE DIGEST

The registration fee includes a CD-ROM with the complete volume of accepted abstracts (plenary, invited and contributed) of the two topical meetings - Optical Microsystems (OMS'11) and Lasers (ETML'11) (ISBN 978-3-00-033710-9).
Please note that the EOS does not publish conference proceedings with extensive papers. Authors who wish to publish in-depth papers are welcome to take advantage of the special publication offer for JEOS:RP (see the next paragraph). The publication offer for JEOS:RP is an option but no obligation.

JEOS:RP SPECIAL PUBLICATION OFFER

EOS European Optical Society
www.jeos.org

All attendees of Optical Microsystems (OMS'11) and Lasers (ETML'11) receive a 20% discount on the publication rate for JEOS:RP (www.jeos.org). The paper must be an original contribution that is connected to one of the conference topics and must be submitted by 2 December 2011.
Special publication rates: 280 € (for members) / 320 € (for non-members).

BEST STUDENT PRESENTATION AWARD

Sponsored by
Springer
science+business media

The best student oral contribution and the best student poster presentation of each EOS Topical Meeting in Capri 2011 - Optical Microsystems (OMS'11) and Lasers (ETML'11) - will be awarded a diploma and a prize sponsored by Springer. All student oral and poster contributions are eligible to the prize. The criteria for the award are relevance, originality, scientific merit and clarity.

WIFI ACCESS

Free WIFI access will be available at both conference locations. Please ask at the registration desk in the Palazzo dei Congressi for the password.

WHISKY UND SHORTBREAD TASTING

In 2012 the EOS Annual Meeting moves from Paris to Aberdeen. For this reason the Aberdeen Convention Bureau will offer a whisky und shortbread tasting for all attendees of OMS'11 and ETML'11. You will find it at the **Patio of the Centro Congressi** on **Monday, 26 September from 17.00-18.30**.

EOS ANNUAL GENERAL MEETING (AGM)

The Annual General Meeting (AGM) of the EOS will be held in conjunction with the two Topical Meetings on **Tuesday, 27 September 2011, 18:30-19:30 in the Sala auditorium of the Palazzo dei Congressi**.

EOS INTERNAL MEETING SCHEDULE

- ADVISORY COMMITTEE MEETING
  Sunday, 25 September 15:00-17:00
  Location: Palazzo dei Congressi, Via Sella Orta, 3, Capri, Italy
  Room: Sala Azzurra

- EXECOM MEETING
  Sunday, 25 September 18:30-20:30
  Location: Palazzo dei Congressi, Via Sella Orta, 3, Capri, Italy
  Room: Sala Azzurra

- BOARD MEETING
  Monday, 26 September 13:00-15:00
  Location: Palazzo dei Congressi, Via Sella Orta, 3, Capri, Italy
  Room: Sala Azzurra

SYNOPSIS

OμS'11 is the 4th edition of an international conference wholly dedicated to Optical Micro-Systems. It is organized by the European Optical Society (EOS) in the frame of its international Topical Meeting activity and will be held in Italy, 26th September 2011 - 28th September 2011, amidst the wonderful scenery of the Island of Capri.

A possible definition of an optical microsystem is a complex system, able to perform one or more sensing and actuation functions, where optical devices are integrated in a smart way with electronic, mechanical and sensing components by taking advantage of the progress in micro- and nano-technologies.

The increasing interest in this field arises from the expected applications that would significantly improve the quality of life. The list of possibilities offered by the optical microsystem enabling technologies is very long and seems to increase day by day. Optical-Micro-Systems will be at the base of the next generation not only of optical telecommunication networks and computers, but also for biotechnologies, environmental monitoring, sensors to improve safety in the avionic and automotive fields, health diagnostics and proteomic/genomic studies, imaging.

The conference programme will focus on fundamental as well as more applied topics. Microfluidic systems, optofluidic systems, photonic crystals, nonlinear and quantum optics in micro-devices, nanophotonic-based devices, silicon-based optoelectronics and MOEMS, microsensors, biochips and the new characterization methods for materials and devices were among the hot topics of the conference.

GENERAL CHAIRS

Ivo Rendina
CNR-IMM (IT)

Eugenio Fazio
Univ. La Sapienza di Roma, IT

Pietro Ferraro
CNR-INOA, IT

OμS'11 is organized in cooperation with the Italian Branch of the EOS:

SIOF Società Italiana di Ottica e Fotonica

LOCAL ORGANIZING COMMITTEE

- **G. Coppola, L. de Stefano, M. Medugno, V. Mocella, L. Sirleto;**
  CNR-IMM (IT)
- **F. Merola, M. Paturzo, L. Miccio;**
  CNR-INOA (IT)
- **M. Alonzo, V. Bonacquisti, R. Passier;**
  Universitá La Sapienza di Roma (IT)

PROGRAMME COMMITTEE

- **Ady Arie**, Tel-Aviv University (IL)
- **Mario Nicola Armenise**, Politecnico Di Bari (IT)
- **Francesco Baldini**, IFAC-CNR, IT
- **Giuseppe Barillaro**, Università di Pisa (IT)
- **Mario Bertolotti**, Università Di Roma "La Sapienza" (IT)
- **Stefano Cabrini**, The Molecular Foundry (US)
- **Giuseppe Cocorullo**, Università della Calabria (IT)
- **Richard De La Rue**, University of Glasgow (GB)
- **Paolo De Natale**, CNR-INOA (IT)
- **Francesco G. Della Corte**, Università Mediterranean di Reggio Calabria (IT)
- **Didier Felbacq**, UMR 5650 CNRS, Université Montpellier II, (FR)
- **Maurizio Ferrari**, IFN-CNR (IT)
- **Kay Gastinger**, NTNU Nanolab (NO)
- **Simonetta Grilli**, CNR-INOA (IT)
- **Hans Peter Herzig**, Ecole Polytechnique Fédérale de Lausanne, EPFL IMT OPT (CH)
- **Massimo Inguscio**, University of Florence (IT)
- **Mario Iodice**, Consiglio Nazionale delle Ricerche (IT)
- **Bahram Jalali**, UCLA Elec Engr (US)
- **Bahram Javidi**, University of Connecticut (US)
- **Laura M. Lechuga**, Microelectronics Institute of Madrid (CSIC) (ES)
- **Gilles Lerondel**, ICD Univ. de Technologie de Troyes (FR)
- **Pasqualino Maddalena**, Università di "Napoli Federico II" (IT)
- **Francesco Michelotti**, Università Di Roma "La Sapienza" (IT)
- **Wolfgang Osten**, University of Stuttgart (DE)
- **Stefano Pelli**, IFAC-CNR (IT)
- **Angela Piegari**, ENEA (IT)
- **Demetri Psaltis**, Ecole Polytechnique Fédérale de Lausanne (CH)
- **Roberta Ramponi**, Politecnico Di Milano (IT)
- **Graham Reed**, University of Surrey (GB)
- **Michael J. Sailor**, UCSD Chemistry and Biochemistry (US)
- **Ali Serpenguezel**, Koç University (TR)
- **Concita Sibilia**, Università Di Roma "La Sapienza" (IT)
- **Corrado Spinella**, Consiglio Nazionale delle Ricerche (IT)
- **Ralph Peter Tatam**, Cranfield University (GB)
- **Zeev Zalevsky**, Bar-Ilan University (IL)

PLENARY SPEAKERS

Monday, 26 September 2011

9:00 - 10:00

Sala Auditorium, Palazzo dei Congressi

Quantum Cascade Lasers: widely tailorable light sources from the mid-infrared to the far-infrared
Federico Capasso,
Harvard University (US)

The design and operating principles of Quantum Cascade Lasers (QCLs) are reviewed along with recent developments in mid-infrared high power cw and broadband devices, far infrared devices, plasmonic lasers and applications to spectroscopy.

Tuesday, 27 September 2011

9:00 - 9:40

Sala Auditorium, Palazzo dei Congressi

Surface plasmon resonance biosensors: from concept to device
Jiri Homola,
Institute of Photonics and Electronics, Prague (CZ)

In this work we discuss several recently developed surface plasmon resonance (SPR) biosensors with emphasis on the integration of sensor hardware, microfluidics and biological elements for rapid, sensitive and specific detection of chemical and biological species.

Wednesday, 28 September 2011

9:00 - 9:40

Sala Auditorium, Palazzo dei Congressi

Optical Sculpting: advanced beam shaping and applications
Kishan Dholakia,
University of St. Andrews (GB)

INVITED SPEAKERS

Monday, 26 September 2011

11:30 - 12:00

Sala Auditorium, Palazzo dei Congressi

Quantum Cascade Resonators as versatile, narrow-linewidth laser sources across the far infrared
Miriam Serena Vitiello,
National Research Council (IT)

Recent results on the measurement of the intrinsic linewidth and on the analysis of the frequency noise features of Terahertz Quantum Cascade Lasers (QCLs) will be discussed, together with their potential in polarization spectroscopy experiments addressed to high sensitivity molecular detection. Novel approaches to guide with almost unitary efficiency, THz QCL micro-ring resonator with the low-loss optical modes of hollow waveguides will be reviewed.

15:30 - 16:00

Sala Auditorium, Palazzo dei Congressi

Deterministic semiconductor quantum wire and dot systems for nanophotonics applications
Eli Kapon,
Ecole Polytechnique Federale de Lausanne (CH)

Epitaxial growth on patterned substrates is employed in producing site-controlled InGaAs/(Al)GaAs QDs and QWRs of high optical quality. Generation of single- and entangled photons, deterministic integration with photonic crystal cavities and realization of low threshold QWR lasers are illustrated with the approach.

10:00 - 10:30

Sala Azzurra, Palazzo dei Congressi

Coherence effects in full-field optical coherence tomography
Ibrahim Abdulhalim,
Ben Gurion University (IL)

The interplay between spatial and temporal coherence in full field optical coherence tomography and its effect on the system performance will be reviewed. Theoretical and experimental results are presented demonstrating the advantages of FF-OCT when optimum coherence conditions are carefully chosen.

INVITED SPEAKERS

Monday, 26 September 2011 - continued

10:30 - 11:00

Sala Azzurra, Palazzo dei Congressi

Lensfree On-Chip Microscopy and Tomography
Aydogan Ozcan,
UCLA (US)

We review our recent progress on computational lensfree on-chip microscopy and tomography techniques for biomedical imaging applications.

11:45 - 12:15

Sala Azzurra, Palazzo dei Congressi

Best of both worlds: combined optical and acoustic trapping for optical characterization or for microfluidic applications
Monika Ritsch-Marte,
Medical University of Innsbruck (AT)

Acoustic and optical trapping differ largely in their scaling, e.g. wavelength to particle size. This allows either modality to be used to compensate for the weaknesses of the other, which offers huge advantages in holding specimens for optical characterization or in the preparation for micro-fluidic sorting.

15:30 - 16:00

Sala Azzurra, Palazzo dei Congressi

Laser-Induced Thermal Effects on Optical and Structural Properties of Silicon Nanocrystals
Leonid Khriachtchev,
University of Helsinki (FI)

Silicon nanostructures are promising for photonic applications. We describe here a series of experimental data on optical and structural characterization of annealed SiO_x ($x < 2$) and Si/SiO_2 superlattice films containing Si nanocrystals. The effect of spectral filtering of photoluminescence observed in these absorbing films allows to measure the optical properties. The 1.5-eV photoluminescence of these materials shows systematic correlations with the optical and structural properties and the chemical composition. Our data show that Si nanocrystals are not a direct light-emission phase in these materials supporting the defect-based mechanism of the light emission.

Tuesday, 27 September 2011

9:45 - 10:15

Sala Auditorium, Palazzo dei Congressi

Nonlinear optical holography
Demetri Psaltis,
Ecole Polytechnique Fédérale de Lausanne (CH)

Holography is a well established technique in the linear regime for three dimensional imaging. We show here how to extend it to reconstruct objects in nonlinear and/or scattering media.

11:30 - 12:00

Sala Auditorium, Palazzo dei Congressi

Single Molecule Biophysics and NanoAssembly with Optofluidic Trapping
David Erickson,
Cornell University (US)

I will present our recent work on the optical trapping and manipulation of single proteins and the assembly of nanomaterials using the near-field of integrated photonic devices. Device design, materials and recent achievements will all be overviewed.

12:45 - 13:15

Sala Auditorium, Palazzo dei Congressi

Liquid microdroplets on a superhydrophobic surface: A promising system for optofluidics research
Alper Kiraz,
Koç University (TR)

Novel spectral tuning techniques, and organic light emitting device concepts developed using microdroplets on a superhydrophobic surface will be summarized. Recent experiments on contact angle measurements using vibrational modes of the microdroplets will also be discussed.

INVITED SPEAKERS

Tuesday, 27 September 2011 - continued

9:45 - 10:15

Sala Azzurra, Palazzo dei Congressi

3D structured organic microcavities: mode confinement, room temperature lasing and plasmon-polariton modes
Hartmut Froeb,
Technical University Dresden (DE)

We report on spatial, temporal, and spectral characteristics of low-threshold roomtemperature organic dielectric microcavity lasers. The further decrease of dimensionality is realised by lateral structuring of the active resp. an additional metal layer or by all-optically controlled patterning of excitation. New hybrid plasmon-polariton modes were obtained.

Wednesday, 28 September 2011

9:45 - 10:15

Sala Auditorium, Palazzo dei Congressi

Complex Aperiodic Nanophotonics: Engineering complexity on Optical Chips
Luca Dal Negro,
University of Boston (US)

I will focus on the broadband enhancement of optical fields for multi-frequency light sources, plasmon enhanced photodetectors and optical biosensors. The applications of DANS to the enhancement of nonlinear interactions on optical chips will also be discussed. Finally, our recent work on circularly symmetric light scattering, phase vortices, and planar diffraction in photonic-plasmonic aperiodic spirals with circular Fourier space will be reviewed, and its impact for the design of broadband energy harvesting elements for thin-film solar cells will be discussed.

9:45 - 10:15

Sala Azzurra, Palazzo dei Congressi

Retardagraphy and its application to optical mass-storage
Tokohiko Yatagai,
Utsunomiya University (JP)

A technique for recording the retardance of an optical anisotropic object is proposed. The retardance pattern is converted into a polarization pattern using a quarter-wave plate and recorded on a polarization-sensitive medium. This method is called retardagraphy, which will be employed in optical mass-storage.

Publish your research

...with JEOS:RP

Discounted publication rates for attendees of OMS'11

The paper submitted must be an original contribution that is connected **to the topics of this EOS event**.

All submissions will be reviewed against JEOS:RP's regular high standards for physical insight, quality and novelty.

JOURNAL OF THE EUROPEAN OPTICAL SOCIETY
RAPID PUBLICATIONS

Paper submission deadline:
02 December 2011

Special publication rates:
(incl. 20 % discount)
320 € (non-member rate)
280 € (member rate)

Journal Management Contact:
Silke Kramprich | Phone: +49-511-2788-117 | Email: jeos-rp@myeos.org

www.jeos.org

SYNOPSIS

The European Optical Society (EOS) is proud to present their second topical Meeting on Lasers to be held in Italy, 26th - 28th September 2011, at the Island of Capri, Italy.

Laser physics and technology is a very diverse field in rapid development and of utmost importance for technological development in the 21st century. Advances in semiconductor lasers, fibre lasers, solid-state lasers, parametric devices and nonlinear frequency conversion provide powerful tools for an increasingly broad range of applications including spectroscopy, metrology, remote sensing, communications, entertainment and display technology, material processing, astronomy, biology and life sciences.

Europe has a strong position in the field of laser physics and technology, and the aim of this meeting is to further strengthen this position.

The conference programme will focus on fundamental as well as more applied topics. The major subjects will be: Semiconductor lasers, quantum-dot lasers, diode-pumped lasers, fiber lasers, nonlinear frequency conversion, parametric devices, ultrafast lasers, materials for lasers and nonlinear optics.

GENERAL CHAIR

Fredrik Laurell
Royal Institute of Technology, KTH (SE)

Organized in cooperation with the Swedish Branch of the EOS:

SOS Svenska OptikSällskapet Swedish Optical Society Branch of the European Optical Society

PROGRAMME COMMITTEE

- **Peter Andersen,** Technical University Denmark (DK)
- **Giulio Cerullo,** Politecnico di Milano (IT)
- **Frédéric Druon,** Laboratoire Charles Fabry de l'Institut d'Optique (FR)
- **Majid Ebrahim-Zadeh,** ICFO (ES)
- **Günter Huber,** Universität Hamburg (DE)
- **Ivo Montrosset,** Politecnico di Torino (IT)
- **Joerg Neumann,** Laser Zentrum Hannover e.V. (DE)
- **Markus Pollnau,** University of Twente (NL)
- **Edik Rafailov,** University of Dundee (GB)
- **Irina Sorokina,** NTNU (NO)

Publish your research

...with JEOS:RP

Discounted publication rates for attendees of ETML'11

The paper submitted must be an original contribution that is connected **to the topics of this EOS event**.

All submissions will be reviewed against JEOS:RP's regular high standards for physical insight, quality and novelty.

JOURNAL OF THE EUROPEAN OPTICAL SOCIETY
RAPID PUBLICATIONS

Paper submission deadline:
02 December 2011

Special publication rates:
(incl. 20 % discount)
320 € (non-member rate)
280 € (member rate)

Journal Management Contact:
Silke Kramprich | Phone: +49-511-2788-117 | Email: jeos-rp@myeos.org

www.jeos.org

PLENARY SPEAKER

Monday, 26 September 2011

9:00 - 10:00

Sala Auditorium, Palazzo dei Congressi

Quantum Cascade Lasers: widely tailorable light sources from the mid-infrared to the far-infrared
Federico Capasso,
Harvard University (US)

The design and operating principles of Quantum Cascade Lasers (QCLs) are reviewed along with recent developments in mid-infrared high power cw and broadband devices, far infrared devices, plasmonic lasers and applications to spectroscopy.

INVITED SPEAKERS

Monday, 26 September 2011

11:30 - 12:00

Sala Auditorium, Palazzo dei Congressi

Quantum Cascade Resonators as versatile, narrow-linewidth laser sources across the far infrared
Miriam Serena Vitiello,
National Research Council (IT)

Recent results on the measurement of the intrinsic linewidth and on the analysis of the frequency noise features of Terahertz Quantum Cascade Lasers (QCLs) will be discussed, together with their potential in polarization spectroscopy experiments addressed to high sensitivity molecular detection. Novel approaches to guide with almost unitary efficiency, THz QCL micro-ring resonator with the low-loss optical modes of hollow waveguides will be reviewed.

15:30 - 16:00

Sala Auditorium, Palazzo dei Congressi

Deterministic semiconductor quantum wire and dot systems for nanophotonics applications
Eli Kapon,
Ecole Polytechnique Federale de Lausanne (CH)

Epitaxial growth on patterned substrates is employed in producing site-controlled InGaAs/(Al)GaAs QDs and QWRs of high optical quality. Generation of single- and entangled photons, deterministic integration with photonic crystal cavities and realization of low threshold QWR lasers are illustrated with the approach.

Tuesday, 27 September 2011

9:00 - 9:30

Hotel la Residenza

Diode-pumped single crystal fiber lasers
François Balembois,
Institut d'Optique (FR)

We will give a review of our research work concerning diode-pumped single crystal fibre lasers. The gain medium is YAG doped with Nd, Yb or Er. The lasers developed demonstrate high gain coefficients (higher than 30), high peak power (MW) and significant average power (ten's of W) in pulsed oscillators and amplifiers.

10:15 - 10:45

Hotel la Residenza

Passively Q-switched Lasers for Spaceborne Applications
Dietmar Kracht,
Laser Zentrum Hannover e.V. (DE)

For the Mars Organic Molecule Analyzer instrument's technology preparation program in the framework of the ExoMars mission, a compact prototype model of a passively Q-switched pulsed UV laser system with a pulse energy of >250 µJ at a pulse duration of around 1 ns and a wavelength of 266 nm has been developed and environmentally tested.

INVITED SPEAKERS

Tuesday, 27 September 2011 - continued

11:30 - 12.00
Hotel
la Residenza

Ultrafast and high power thin disk lasers
Christian Kraenkel,
Hamburg University (DE)

We review the recent developments of ultrafast thin disk laser oscillators with unrivaled average output powers exceeding 140 W and pulse energies of several 10 µJ. This rapid progress was supported by the development of tailored gain materials, supporting high efficiencies or pulse durations below 200 fs.

15:30 - 16:00
Hotel
la Residenza

Ceramic lasers and laser materials toward giant micro-photonics
Takunori Taira,
Institute for Molecular Science (JP)

Transparent laser ceramics have been demonstrated to offer tremendous processing and design advantages in diode pumped solid-state laser field. After the review of the ceramic lasers, we'd like to discuss the next generation of high performance giant lasers as state-of-the-art micro solid -state photonics.

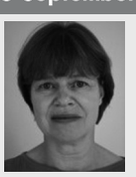
16:00 - 16:30
Hotel
la Residenza

Tm and Ho femtosecond lasers around 2um
Alexander A. Lagatsky,
University of St. Andrews (GB)

Recent progress in the development of ultrashort-pulse crystalline lasers operating around the 2-µm spectral region is reported. In particular, efficient femtosecond operation in Tm,Ho co-doped and Tm-doped double tungstate crystals is achieved using a SESAM mode-locking approach.

Wednesday, 28 September 2011

9:00 - 9:30
Hotel
la Residenza



Mode-locked VECSELs
Anne Tropper,
Southampton University (GB)

Optically-pumped surface-emitting external cavity quantum well lasers combine high average power with good beam quality, and readily exhibit passive mode-locking under the influence of an intracavity Semiconductor Saturable Absorber Mirror (SESAM). These lasers have been observed to generate near transform-limited optical pulses of 60-fs duration.

9:30 - 10:00
Hotel
la Residenza

High-power ultrafast quantum-dot edge-emitting lasers
Maria Ana Cataluna,
University of Dundee (GB)

This talk will cover our recent progress on ultrafast InAs/GaAs quantum-dot edge-emitting lasers, particularly highlighting the generation of ultrashort pulses with record-high peak power from monolithic tapered lasers, as well as high-energy and low-noise pulse generation, at low pulse repetition rates, from external-cavity lasers.

LASERS	OµS I	OµS II
MONDAY, 26 September		
8:45 - 9:00 WELCOME by the chairs		
9:00 - 10:00 PLENARY TALK **Quantum Cascade Lasers: widely tailorable light sources from the mid-infrared to the far-infrared** F. Capasso; School of Engineering and Applied Sciences, Harvard University (US).		
10:00 - 11:00 TERAHERTZ (JOINT SESSSION) 11:00 - 11:30 Coffee break 11:30 - 12:45 TERAHERTZ (JOINT SESSSION) - continued 12:45 - 13:30 ORGANIC AND NANO LASERS (JOINT SESSION) 13:30 - 15:30 Lunch break 15:30 - 17:00 ORGANIC AND NANO LASERS (JOINT SESSION) - continued		10:00 - 11:30 OPTICAL IMAGING AND CHARACTERIZATION METHODS 11:30 - 11:45 Coffee break 11:45 - 13:30 OPTICAL IMAGING AND CHARACTERIZATION METHODS- continued 13:30 - 15:30 Lunch break 15:30 - 17:00 OPTICAL IMAGING AND CHARACTERIZATION METHODS - continued
17:00 - 18:30 **WHISKY UND SHORTBREAD TASTING** [Patio of the Centro Congressi]		
19:15 - 20:30 **POSTER SESSION AND RECEPTION** [Terrace of the hotel la Residenza]		
TUESDAY, 27 September		
9:00 - 11:00 DIODE-PUMPED LASERS AND MODE-LOCKED LASERS 11:00 - 11:30 Coffee break 11:30 - 13:15 THIN DISC AND HIGH ENERGY LASERS 13:15 - 15:30 Lunch break	9:00 - 9:40 PLENARY TALK **Surface plasmon resonance biosensors: from concept to device** J. Homola; Institute of Photonics and Electronics, Prague (CZ). 9:45 - 11:00 BIOPHOTONICS, MICROFLUIDICS AND OPTOFLUIDICS 11:00 - 11:30 Coffee break 11:30 - 13:45 BIOPHOTONICS, MICROFLUIDICS AND OPTOFLUIDICS - continued 13:45 - 15:45 Lunch break	9:45 - 11:15 OPTICAL MICROSYSTEMS AND MICROSENSORS 11:15 - 11:45 Coffee break 11:45 - 13:15 OPTICAL MICROSYSTEMS AND MICROSENSORS - continued 13:15 - 15:45 Lunch break

LASERS	OμS I	OμS II
TUESDAY, 27 September - continued		
15:30 - 17:00 LASER MATERIALS AND MID-IR	15:45 - 16:45 PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS	15:45 - 16:45 APPLICATION OF OPTICAL SYSTEMS
	16:45 - 17:30 Coffee break	16:45 - 17:30 Coffee break
17:00 - 17:30 Coffee break		
17:30 - 18:45 OPTICAL PARAMETRIC OSCILLATORS	17:30 - 18:15 PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS - continued	17:30 - 18:15 APPLICATION OF OPTICAL SYSTEMS - continued
18:30 - 19:30 ANNUAL GENERAL ASSEMBLY		
20:30 Conference Dinner		

WEDNESDAY, 28 September		
9:00 - 11:00 SEMICONDUCTOR LASERS	9:00 - 9:40 PLENARY TALK **Title tba** K. Dholakia; University of St. Andrews (GB).	
	9:45 - 11:15 PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS - continued	9:45 - 11:15 APPLICATION OF OPTICAL SYSTEMS - continued
11:00 - 11:30 Coffee break		
	11:15 - 11:45 Coffee break	11:15 - 11:45 Coffee break
11:30 - 12:30 POST-DEADLINE SESSION	11:45 - 12:30 POST-DEADLINE SESSION	11:45 - 12:30 POST-DEADLINE SESSION
END OF EOS TOPICAL MEETINGS		

Notes

Sala Auditorium, Palazzo dei Congressi		Sala Azzurra, Palazzo dei Congressi
LASERS	OμS I	OμS II

8:45-9:00 WELCOME by the chairs

9:00-10:00 **PLENARY TALK** Sala Auditorium, Palazzo dei Congressi

Quantum Cascade Lasers: widely tailorable light sources from the mid-infrared to the far-infrared
F. Capasso; School of Engineering and Applied Sciences, Harvard University (US).
The design and operating principles of Quantum Cascade Lasers (QCLs) are reviewed along with recent developments in mid-infrared high power cw and broadband devices, far infrared devices, plasmonic lasers and applications to spectroscopy. [4642]

10:00-11:00
TERAHERTZ (JOINT SESSION)
Chairs: tba

10:00 STUDENT PRESENTATION
Surface emitting Terahertz Photonic Crystal Quantum Cascade Laser realized by Bragg boundary condition
Z. Diao[1], G. Scalari[2], J. Faist[2], R. Houdré[1]; [1]Ecole Polytechnique Fédérale de Lausanne (EPFL), Institut de Physique de la Matière Condensée (CH), [2]Eidgenössische Technische Hochschule Zürich (ETHZ), Institut für Quantenelektronik (CH).
We theoretically and experimentally investigate band edge Photonic Crystal (PhC) Quantum Cascade Laser (QCL) operating at 3 THz. Surface emission is achieved with the use of a second order Bragg grating at the boundaries. [4490]

10:15
Broadband modeless cw semiconductor laser: design and coherence properties
A. Garnache[1], M. Myara[1], C. Michel[2], A. Boucon[2]; [1]Institut d'Electronique du Sud CNRS UMR5214 (FR), [2]Laboratoire Interdisciplinaire Carnot CNRS UMR5209 (FR).
We demonstrate broadband (THz) cw operation of a modeless external-cavity quantum-dot semiconductor diode laser. The laser cavity design is based on a frequency shifted feedback laser design using an intracavity acousto-optic frequency shifter. The rms intensity fluctuations are <0.5% and the coherence time is ~1μs. The spectral optical power density is ~0.2 μW/MHz. [4558]

10:30 STUDENT PRESENTATION
Generation of Dual-Modes from a Quantum Dot Diode Laser for THz DFG
R. Leyman, D.I. Nikitichev, N. Bazieva, E.U. Rafailov; School of Engineering, Physics and Mathematics, University of Dundee (GB).
Generation of stable dual-mode optical beams around wavelengths 1180 nm and 1260 nm emitted from a single quantum dot (QD) laser diode by using an external cavity feedback setup with volume Bragg gratings (VBG's) is reported. Control of dual-modes at either 1180 nm, 1260 nm or both simultaneously is demonstrated. [4478]

10:45
Vectorial control of the THz field in multilayered graphene
P. Obraztsov[1,2], N. Kanda[3], Y. Okane[3], K. Konishi[3], S.V. Garnov[2], A.N. Obraztsov[4], Yu.P. Svirko[1], M. Kuwata-Gonokami[3]; [1]Department of Physics and Mathematics, University of Eastern Finland (FI), [2]General Physics Insititute (RU), [3]Department of Physics, University of Tokyo (JP), [4]Department of Physics, Moscow State University (RU).
We demonstrate vectorial control of THz field generated by femtosecond laser pulses in graphene. The THz currents is described in terms of the photon drag effect enhanced by the quasi-ballistic carrier transport in graphene. [4578]

11:00-11:30 Coffee break

10:00-11:30
OPTICAL IMAGING AND CHARACTERIZATION METHODS
Chairs: tba

Invited Talk
10:00
Coherence effects in full-field optical coherence tomography
I. Abdulhalim; Department of Electro optic Engineering and the Ilse Katz Institute for Nanoscale, Science and Technology, Ben Gurion University of the Negev (IL).
The interplay between spatial and temporal coherence in full field optical coherence tomography and its effect on the system performance will be reviewed. Theoretical and experimental results are presented demonstrating the advantages of FF-OCT when optimum coherence conditions are carefully chosen. [4484]

Invited Talk
10:30
Lensfree On-Chip Microscopy and Tomography
A. Ozcan; UCLA (US).
We review our recent progress on computational lensfree on-chip microscopy and tomography techniques for biomedical imaging applications. [4674]

Sala Auditorium, Palazzo dei Congressi

Sala Azzurra, Palazzo dei Congressi

LASERS	OμS I	OμS II

11:00
Imaging fibre bundles in optical coherence tomography
H.D. Ford, A. Saglam, R.P. Tatam; Cranfield University, Department of Engineering Photonics (UK).
The properties of imaging fibre bundles have been investigated with regard to their proposed use in optical coherence tomography applications (OCT). Fibre bundles allow images to be obtained without spatial scanning at the probe tip. Results will be presented from single-fibre and bundle-based Cranfield OCT systems. [4626]

11:15 STUDENT PRESENTATION
Automatic algorithm for the detection and 3D tracking of biological particles in Digital Holographic Microscopy
G. Di Caprio[1], A. El Mallahi[2], P. Ferraro[3], G. Coppola[1], F. Dubois[2]; [1]Institute for the Microelectronics and Microsystems – CNR (IT), [2]Université Libre de Bruxelles – Microgravity Research Center (BE), [3]National Institute of Optics - CNR (IT).
We propose an approach for the detection and the three dimensional tracking of particle flowing in a microfluidic channel by means of Digital Holographic Microscopy working in partial coherence. [4585]

11:30 - 11:45 Coffee break

11:30-12:45
TERAHERTZ (JOINT SESSION) - continued
Chairs: tba

11:45-13:30
OPTICAL IMAGING AND CHARACTERIZATION METHODS - continued
Chairs: tba

11:30 Invited Talk
Quantum Cascade Resonators as versatile, narrow-linewidth laser sources across the far infrared
M. Serena Vitiello, National Research Council (IT)
Recent results on the measurement of the intrinsic linewidth and on the analysis of the frequency noise features of Terahertz Quantum Cascade Lasers (QCLs) will be discussed, together with their potential in polarization spectroscopy experiments addressed to high sensitivity molecular detection. Novel approaches to guide with almost unitary efficiency, THz QCL micro-ring resonator with the low-loss optical modes of hollow waveguides will be reviewed.

11:45 Invited Talk
Best of both worlds: combined optical and acoustic trapping for optical characterization or for microfluidic applications
M. Ritsch-Marte; Medical University of Innsbruck (AT).
Acoustic and optical trapping differ largely in their scaling, e.g. wavelength to particle size. This allows either modality to be used to compensate for the weaknesses of the other, which offers huge advantages in holding specimens for optical characterization or in the preparation for micro-fluidic sorting. [4670]

Sala Auditorium, Palazzo dei Congressi

Sala Azzurra, Palazzo dei Congressi

LASERS

OμS I

OμS II

12:15

Intersubband Plasmon THz Source based on InGaAs Quantum Wells

E. Gornik[1], J. Silvano de Sousa, A. Pfnier[1], M. Coquelin[1], A.M. Andrews[1], P. Klang[1], P. Bakshi[2], G. Strasser[1]; [1]Center for Micro- and Nanostructures and Institute for Solid-State Electronics, Vienna University of Technology (AT), [2]Physics Department, Boston College (US).

The controlled excitation of Plasma instabilities (PI) in semiconductors offers the possibility of coherent THz sources. If an excitation of two intersubband plasmons (ISP), which get under special conditions in resonance, takes place, a PI can occur. For the interaction of two resonant plasmon modes a special nanostructure was designed. [4492]

12:30 STUDENT PRESENTATION

Large enhancement of second-order optical nonlinearities in silicon nanophotonic waveguides by local plasma-activation

C. Matheisen[1], T. Wahlbrink[2], J. Bolten[2], M. Waldow[1], S. Sawallich[1], M. Nagel[2], H. Kurz[1,2]; [1]Institute of Semiconductor Electronics, RWTH Aachen University (DE), [2]AMO GmbH (DE).

We present a novel, CMOS compatible approach for the local generation of secondorder nonlinear optical activity in silicon nanophotonic waveguides based on a plasma-mediated surface-activation. The functionality is demonstrated in terms of a miniaturized "THz fluorescent writing" using local difference frequency generation. [4540]

12:45-13:30

ORGANIC AND NANO LASERS (JOINT SESSION)

Chairs: tba

12:45

Self-assembled microlasers fabricated by drop deposition of colloidal semiconductor core-shell nanorods

R. Krahne[1], M. Zavelani-Rossi[2], G. Lanzani[2], I. Franchini[3], S. Girardo[3], D. Pisignano[3], L. Manna[1]; [1]Italian Institute of Technology (IT), [2]Politecnico di Milano (IT), [3]National Nanotechnology Laboratory CNR-Nanoscience (IT).

We fabricated self-assembled micro-lasers by controlled jet deposition onto planer glass substrates of dot-in-a-rod core-shell CdSe/CdS nanorods dissolved in toluene solution. Laser emission was observed both from core and from shell states upon optical pumping, with threshold values of the pump fluence as low as 0.2 mJ/ cm^2. [4477]

12:15

Effects of Gaussian- and Flattened-Gaussian beam in scanning light sheet Ultramicroscopy employing Meso-optical elements

S. Saghafi[1,2], N. Jährling[1,2,3], K. Becker[1,2], H.-U. Dodt[1,2]; [1]Vienna University of Technology, FKE, Dept. of Bioelectronics (AT), [2]Center for Brain Research (MUW), Sect. Biolelectronics (AT), [3]University of Oldenburg, Dept. Neurobiology (DE).

Ultramicroscopy-UM allows 3D-visulaztion of biological specimens with μm-resolution. The spatial intensity distribution of laser beam illuminating the specimen has the foremost impact on the quality of image in UM. In this paper, we present a new design that can be used for scanning light-sheet microscopy. We compared the effects of the incident beam intensity distribution, Gaussian and flattened-Gaussian beam, on the output beam profiles. [4570]

12:30

High speed laser projection microscope for micro objects monitoring & diagnostics

G.S. Evtushenko[1], Maxim V. Trigub[1,2], F.A. Gubarev[1,2], S.N. Torgaev[1,2]; [1]Tomsk Polytechnic University (RU), [2]V.E. Zuev Institute of Atmospheric Optics, Siberian Branch of Russian Academy of Sciences (RU).

Nowadays a lot of attention is paid to the problem of visualization of high-speed processes, in particular, the processes hidden from view of an observer by intensive backlight. Such processes occur in zones of interaction of powerful energy fluxes with matter. High-speed active optical systems with CuBr brightness amplifiers, the so-called laser monitors, can be successfully used for monitoring such processes as laser materials processing, self-propagating high-temperature synthesis (SHS), processes in biological tissues and etc. The use of laser monitors allows real-time mode process monitoring, and the opportunity for using them to control these processes is in sight. [4563]

12:45

Superresolution Imaging in Video-Confocal Microscopy

P.A. Benedetti; INO and IPCF CNR, Laboratory of Multidimensional Optical Microscopy (IT).

Video-Confocal Microscopy (VCM) is one of the modern imaging approaches in multidimensional fluorescence and reflection optical microscopy. Key aspect in VCM is mixing narrow-field sample illumination with wide-field image detection to make both design simpler and spatial resolution higher in applications ranging from biomedical investigation to materials science. [4618]

Sala Auditorium, Palazzo dei Congressi

Sala Azzurra, Palazzo dei Congressi

LASERS

OµS I

13:00
Tunable Ultraviolet Vertically-emitting Organic Laser
S. Forget, H. Rabbani-Haghighi, N. Diffalah, A. Siove, S. Chenais; Laboratoire de Physique des Lasers, Université Paris 13 / CNRS (FR).
A solid-state organic thin-film laser with intracavity frequency doubling is reported. Tunable ultraviolet emission from 309 to 322 nm is achieved from a vertical external cavity surface-emitting organic laser, with 2 % efficiency (1 µJ at 315 nm). [4513]

13:15 STUDENT PRESENTATION
Silicon Nanoparticles coupled with Ultra-High-Q Whispering Gallery Microcavities
Y. Candéla[1], R. Pratibha Nalini[2], F. Gourbilleau[2], J.-B. Jager[3], V. Lefèvre-Seguin[1], J. Hare[1]; [1]Laboratoire Kastler Brossel, CNRS, UPMC (FR), [2]CIMAP, CNRS/CEA/Ensicaen/UCBN (FR), [3]CEA Grenoble INAC/SP2M/SINAPS Minatec (FR).
We study the emission of silicon nanoparticles embedded in fused silica microcavities. We report for the first time that the emission in ultra-high-Q cavities comes from the edge of the structure. [4564]

OµS II

13:00 STUDENT PRESENTATION
Numerical 3D tracking and quantitative phase-contrast microscopy of cells in micro-fluidics
P. Memmolo[1,2], A. Finizio[1], M. Paturzo[1], P. Ferraro[1]; [1]CNR - Istituto Nazionale di Ottica (IT), [2]DIBET, Università degli Studi di Napoli "Federico II" (IT).
We show a completely new concept of a compact holographic microscope that can ensure more than one functionality, accomplishing by the same configuration and simultaneously, an accurate 3D tracking and a quantitative phase-contrast analysis. [4582]

13:15
Digital Holography Microscopy to enhance Phase contrast of Spermatozoa cells
L. Miccio[1], F. Merola[1], A. Finizio[1], P. Memmolo[1], G. Coppola[2], G. Di Caprio[2], M. Gioffré[2], R. Puglisi[3], D. Balduzzi[3], A. Galli[3], P. Ferraro[1]; [1]Istituto Nazionale di Ottica del CNR, (INO-CNR) Naples Section (IT), [2]CNR - Istituto per la Microelettronica e Microsistemi (IT), [3]Istituto Sperimentale Italiano "Lazzaro Spallanzani" (IT).
To improve visualization and detection of bull spermatozoa numerical analysis is implemented starting from Digital Holographic (DH) recording. Quantitative Phase Map (QPM) and qualitative Differential Interference Contrast (DIC) imaging are performed. A further approach is described to get QPM for specimen flowing in micro-fluidic channels. [4602]

13:30-15:30 Lunch break

15:30-17:00
ORGANIC AND NANO LASERS (JOINT SESSION) - continued
Chairs: tba

Invited Talk
15:30
Deterministic semiconductor quantum wire and dot systems for nanophotonics applications
E. Kapon; Ecole Polytechnique Fédérale de Lausanne (CH).
Epitaxial growth on patterned substrates is employed in producing site-controlled InGaAs/(Al)GaAs QDs and QWRs of high optical quality. Generation of single- and entangled photons, deterministic integration with photonic crystal cavities and realization of low threshold QWR lasers are illustrated with the approach. [4673]

15:30-17:00
OPTICAL IMAGING AND CHARACTERIZATION METHODS - continued
Chairs: tba

Invited Talk
15:30
Laser-Induced Thermal Effects on Optical and Structural Properties of Silicon Nanocrystals
L. Khriachtchev; Department of Chemistry, University of Helsinki (FI).
Silicon nanostructures are promising for photonic applications. We describe here a series of experimental data on optical and structural characterization of annealed SiO_x ($x < 2$) and Si/SiO_2 superlattice films containing Si nanocrystals. The effect of spectral filtering of photoluminescence observed in these absorbing films allows to measure the optical properties. The 1.5-eV photoluminescence of these materials shows systematic correlations with the optical and structural properties and the chemical composition. Our data show that Si nanocrystals are not a direct light-emission phase in these materials supporting the defect-based mechanism of the light emission. [4499]

Sala Auditorium, Palazzo dei Congressi

Sala Azzurra, Palazzo dei Congressi

LASERS

OμS I

16:00
Stimulated Raman Scattering in Quantum Dots and Nanocomposites Silicon Based Materials
M.A. Ferrara, I. Rendina, L. Sirleto; National Research Council (CNR), Istituto per la Microelettronica e Microsistemi (IT).
Raman scattering in electrons-confined and photons-confined materials is a fascinating research field of great importance from both fundamental and applicative point of view. Concerning the fundamental one, there have been a number of investigations both experimental and theoretical, but the question is still 'open', while from an applicative point of view there are some important prospective for example to realize micro/nano source, with improved performances, based on stimulated Raman scattering. [4592]

16:15 STUDENT PRESENTATION
Laser emission at 1060 nm in Nd^{3+} doped glass microspheres without coupling devices
L.L. Martin, D. Navarro-Urrios, F. Ferrarese Lupi, C.J. Pérez-Rodríguez, P. Haro-González, I.R. Martín, N.E. Capuj; Universidad de la Laguna (ES).
Microspheres of Barium Titano Silicate glass, doped with Nd^{3+} ions have been made and have achieved laser emission at 1064 nm when pumped at 514 nm using low pump power at room temperature and detecting without any coupling device. [4588]

16:30
Operation of Raman laser based on silicon bulk-crystal at temperature of 10 K
V. Lisinetskii[1], O. Lux[2], H. Rhee[2], S. Schrader[1], H.J. Eichler[2]; [1]University of Applied Sciences Wildau, Engineering Physics (DE), [2]TU Berlin - Institut für Optik und Atomare Physik (DE).
Raman laser operation based on silicon bulk crystal at a temperature of about 10 K was investigated both experimentally and numerically. The Raman laser produces radiation at 1.127 mm wavelength with a slope efficiency of 1.5 %. A strong effect of free-carrier induced lensing in silicon is observed. [4523]

OμS II

16:00 STUDENT PRESENTATION
Scanning near field optical microscopy probes with adirectional asymmetries
V. Lotito[1,2], U. Sennhauser[1], C. Hafner[2]; [1]EMPA, Swiss Federal Laboratories for Materials Science and Technology, Electronics/Metrology Laboratory (CH), [2]ETH Zurich, Laboratory of electromagnetic fields and microwave electronics (CH).
A spiral corrugation in an axisymmetric fully metal-coated near field probe allows the attainment of strong field localization under linearly polarized excitation with arbitrary orientation. Hence, high resolution is achievable without the need for an awkward radially polarized excitation or a linearly polarized input with a specific direction. [4528]

16:15
Hyperspectral Nanoscale Imaging with optical antennae on Scanning Probe Tips
W. Bao[1], F. Intonti[2], V. Materazzo[2], F. Riboli[2], D. Wiersma[2], S. Cabrini[1], P.J. Schuck[1], A. Weber-Bargioni[1]; [1]Molecular Foundry, Lawrence Berkeley National Laboratory (DE), [2]European Laboratory for Non-Linear Spectroscopy (IT).
The concept of optical antennae to focus light well below the diffraction limit, while enhancing the optical near field several orders of magnitude has only been feasible due to the advancements in nano fabrication over the past few years. A lot of work has been done on various nano fabrication approaches of optical antennae and the determination of their resonance behavior, leading to novel mode-coupling schemes, antenna-coupled plasmonic waveguides, and resonators that separate near fields energetically as well as spatially on length scales well below the diffraction limit. [4575]

16:30
Laser Induced Breakdown Spectroscopy for Coal Characterization
F. Barberis, E. Golinelli, S. Musazzi, U. Perini, G.A. Zanetta; Ricerca sul Sistema Energetico - RSE S.p.A. (IT).
Elemental analysis of coal samples, in connection with numerical models, allows to predict the slagging propensity of coals. This paper presents preliminary experimental results relevant to LIBS measurements carried out on properly prepared graphite based samples. [4485]

Sala Auditorium, Palazzo dei Congressi		Sala Azzurra, Palazzo dei Congressi
LASERS	OμS I	OμS II
16:45 **MEMS-based dynamic laser beam shaper and homogenizer** *J. Masson[1], R. Bitterli[1], A. Bich[2], W. Noell[1], R. Voelkel[2], K. Weible[2], N.F. de Rooij[1]; [1]EPFL, SAMLAB (CH), [2]SUSS MicroOptics SA (CH).* We present a dynamic laser beam shaper that can generate smooth flat-top and Gaussian intensity profiles. It consists of a 100% fill factor membrane, supported by beams or posts, which deforms dynamically to shape and smooth coherent light. The mirror array is fabricated over a scanning stage that enables interference averaging. [4507]		16:45 **Homogeneity Test of Glass Plates using Adaptive Frequency Comb Illumination in Fizeau Interferometry** *J. Schwider[1], K. Mantel[2]; [1]Institute of Optics, Information, and Photonics, University of Erlangen-Nürnberg (DE), [2]Max Planck Institute for the Science of Light (DE).* Homogeneity tests with the help of Fizeau interferometers suffer from nested cavity geometries which cause severe disturbing fringe patterns. Broad band frequency comb illumination allows for the selection of single cavities out of the whole set. For unique homogeneity tests 4 interferograms can be adjusted using suitable combs. [4556]

17:00-18:30 Whisky und Shortbread Tasting at the patio of the Centro Congressi

19:15-20:30 Poster session and reception at the terrace of the hotel la Residenza

Notes

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	OμS I	OμS II

9:00-11:00 DIODE-PUMPED LASERS AND MODE-LOCKED LASERS

Chairs: Anne Tropper

9:00 **Invited Talk**

Diode-pumped single crystal fiber lasers

F. Balembois[1], I. Martial[1,2], D. Sangla[1,3], X. Délen[1], Y. Zaouter[4], E. Mottay[4], F. Druon[1], P. Georges[1], K. Lebbou[3], A. Brenier[3], N. Aubry[2], J. Didierjean[2], D. Perrodin[2], J.-M. Fourmigué[2]; [1]Laboratoire Charles Fabry de l'Institut d'Optique, CNRS, Université Paris-Sud (FR), [2]Fibercryst SAS, La Doua-Bâtiment l'Atrium (FR), [3]Laboratoire de Physico-Chimie des Matériaux Luminescents, CNRS, UMR5620, Univ. de Lyon (FR), [4]Amplitude Systemes (FR).

We will give a review of our research work concerning diode-pumped single crystal fibre lasers. The gain medium is YAG doped with Nd, Yb or Er. The lasers developed demonstrate high gain coefficients (higher than 30), high peak power (MW) and significant average power (ten's of W) in pulsed oscillators and amplifiers. [4495]

9:30

Mode-locked ytterbium-doped fiber laser operating in the positive dispersion regime tunable over the range 1045-1065 nm

A. Agnesi, L. Carrà, C. Di Marco, R. Piccoli; University of Pavia, Department of Electronics (IT).

A mode-locked ytterbium-doped fiber laser operting in the normal dispersion regime has been demonstrated in a all-PM cavity. The laser is tunable over the wavelength range 1045-1065 nm with transform-limited pulse duration of 15 ps and repetition rate below 20 MHz. [4488]

9:45

Mode locking of Er fiber laser with electrooptical fiber modulator

M. Malmström[1], W. Margulis[1,2], O. Tarasenko[2], V. Pasiskevicius[1], F. Laurell[1]; [1]Royal Institute of Technology (KTH), Dept of Applied Physics (SE), [2]Acreo AB, Fiber Photonics (SE).

This paper demonstrates a self-starting mode-locked fiber laser that incorporates an electrooptical fiber modulator and exploits soliton compression for picosecond pulse generation. The ring laser runs at 1.3 MHz, the pulse duration is ~2 ps and the bandwidth ~1 nm. The laser cavity is all fiber-based and the fiber modulator stabilizes pulse formation. [4634]

9:00-9:40 PLENARY TALK

Chairs: tba

Sala Auditorium, Palazzo dei Congressi

Surface plasmon resonance biosensors: from concept to device

J. Homola; Institute of Photonics and Electronics (CZ).

In this work we discuss several recently developed surface plasmon resonance (SPR) biosensors with emphasis on the integration of sensor hardware, microfluidics and biological elements for rapid, sensitive and specific detection of chemical and biological species. [4671]

9:45-11:00 BIOPHOTONICS, MICROFLUIDICS AND OPTOFLUIDICS

Chairs: tba

9:45 **Invited Talk**

Nonlinear optical holography

D. Psaltis; Ecole Polytechnique Fédérale de Lausanne (CH).

Holography is a well established technique in the linear regime for three dimensional imaging. We show here how to extend it to reconstruct objects in nonlinear and/or scattering media. [4669]

9:45-11:15 OPTICAL MICROSYSTEMS AND MICROSENSORS

Chairs: tba

9:45 **Invited Talk**

3D structured organic microcavities: mode confinement, room temperature lasing and plasmon-polariton modes

H. Froeb, R. Brueckner, J. Haase, M. Langner, M. Sudzius, A. Zakhidov, S.I. Hintschich, V.G. Lyssenko, K. Leo; Institut für Angewandte Photophysik, Technische Universität Dresden (DE).

We report on spatial, temporal, and spectral characteristics of low-threshold room-temperature organic dielectric microcavity lasers. The further decrease of dimensionality is realised by lateral structuring of the active resp. an additional metal layer or by all-optically controlled patterning of excitation. New hybrid plasmon-polariton modes were obtained. [4624]

Hotel la Residenza

LASERS

10:00 STUDENT PRESENTATION

Femtosecond Single-Mode Diode-Pumped Cr:LiSAF Laser Mode-Locked with Single-Walled Carbon Nanotubes

A. Agnesi[1], F. Pirzio[1], E. Ugolotti[1], S.Y. Choi[2], F. Rotermund[2]; [1]University of Pavia, Electronics Department (IT), [2]Division of Energy Systems Research (KR).

We present a low threshold and low pump-power Cr:LiSAF laser, excited with an inexpensive single mode laser diode emitting 120 mW. This laser is passively mode-locked with new Saturable Absorber Mirrors (SAMs) based on carbon nanotubes. [4489]

10:15 Invited Talk

Passively Q-switched Lasers for Spaceborne Applications

D. Kracht, C. Kolleck, J. Neumann; Laser Zentrum Hannover e.V. (DE).

For the Mars Organic Molecule Analyzer instrument's technology preparation program in the framework of the ExoMars mission, a compact prototype model of a passively Q-switched pulsed UV laser system with a pulse energy of >250 µJ at a pulse duration of around 1 ns and a wavelength of 266 nm has been developed and environmentally tested. [4620]

Sala Auditorium, Palazzo dei Congressi

OµS I

10:15 STUDENT PRESENTATION

Development and modeling of a microfluidic porous silicon array for optical sensing

E. Orabona[1,2], I. Rea[1], I. Rendina[1], L. De Stefano[1]; [1]Institute for Microelectronics and Microsystems - National Council of Research, Naples (IT), [2]Dept. of Physics, University of Naples "Federico II", Naples (IT).

We describe the fabrication and the characterization of a microfluidics assisted microarray based on nanostructured silicon for label-free biochemical optical sensing. The binding kinetics in the microfluidic system has been modelled and investigated by finite element simulations in order to optimize the performances. [4576]

10:30

Hybrid-integrated optofluidic microparticle sensor using a vertical-extended-cavity surface-emitting laser

W. Schwarz[1], A.J. Márquez del Pino[1], D. Rimpf[2], F. Rinaldi[1], T. Mappes[2], R. Michalzik[1]; [1]Ulm University, Institute of Optoelectronics (DE), [2]Karlsruhe Institute of Technology, Institute of Microstructure Technology (DE).

We report the integration of an electrically pumped GaAs-based oxide-confined vertical-extended-cavity surface-emitting laser and a microfluidic chip. Particles in the microchannels flow through the laser resonator and induce a change of the cavity resonance, thus allowing sensitive detection to trigger a subsequent sorting process. [4550]

Sala Azzurra, Palazzo dei Congressi

OµS II

10:00

Fabrication of microstructures by a new concept of 3D lithography

V. Vespini, S. Coppola, A. Finizio, S. Grilli, F. Merola, P. Ferraro; CNR, Istituto Nazionale di Ottica -Sezione di Napoli (IT).

We present a novel approach for fabricating a wide variety of soft solid-like microstructures, thus leading to a new concept in 3D lithography. A relatively easy to accomplish technique has been demonstrated for curing different transient stages of polymer fluids by rapid cross-linking of PDMS. [4589]

10:15

Light Emitting Polymer Nanofibers: Novel Microscopic Light Sources

A. Composeo[1], S. Pagliara[1], F. Di Benedetto[1,2], A. Polini[1], E. Mele[3], L. Persano[1], D. Pisignano[1,2,3]; [1]National Nanotechnology Laboratory, Istituto Nanoscienze-CNR, Università del Salento (IT), [2]Dipartimento di Ignegneria dell'Innovazione, Università del Salento (IT), [3]Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia (IT).

We report on the fabrication of electrospun light-emitting polymer nanofibers made by conjugated and dye-doped polymers. We investigate the tunability, waveguiding, gain and polarization properties of the emission. The fibers are also integrated in prototype microfluidic system as micro-scale polarized light sources. [4584]

10:30

Liquid droplet chemical sensors

G. Gagliardi[1], S. Avino[1], A. Giorgini[1], P. Ferraro[1], M. Capezzuto[2], H. Wachter[3], H.P. Loock[3], P. De Natale[1]; [1]CNR-Istituto Nazionale di Ottica (INO) (IT), [2]Dipartimento di Scienze Fisiche, Università di Napoli "Federico II" (IT), [3]Dept. of Chemistry, Queen's University (CA).

We report on chemical sensing with liquid spherical microresonators. Free-space laser-beam excitation of whispering-gallery modes in oil droplets is presented. The potential of cavity ring-down absorption spectroscopy for detection of liquid analytes dissolved in the drop material is discussed. [4538]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**

10:45
Self-frequency doubling in Nd:YAB channel waveguides under CW-laser operation at 1.06 μm
E. Cantelar[1], N. Dong[2], J. Martínez de Mendivil[1], G. Lifante[1], J. Vázquez de Aldana[3], G.A. Torchia[4], F. Chen[2], D. Jaque[1]; [1]Departamento de Física de Materiales (C-04), Facultad de Ciencias, Universidad Autónoma de Madrid (ES), [2]School of Physics, State Key Laboratory of Crystal Materials, Shandong University (CN), [3]Departamento de Física Aplicada, Facultad de Ciencias Físicas, Universidad de Salamanca (ES), [4]Centro de Investigaciones Ópticas, CIC-Conicet (AR).
In this work, the ability of Nd:YAB buried channel waveguides fabricated by ultrafast laser inscription for green laser light generation under 808 nm pumping by self-frequency-doubling of the 1.06 μm laser line of Nd^{3+} ions is demonstrated. [4526]

10:45
Self-Induced Back-Action trapping: toward a dynamic conception of optical trapping
M.L. Juan[1], R. Quidant[1], Y. Pang[2], F. Eftekhari[2], R. Gordon[2], C. Chen[3], P. Van Dorpe[3]; [1]ICFO-Institut de Ciences Fotoniques (ES), [2]Departement of Electrical and Computer Engineering, University of Victoria (CA), [3]IMEC vzw. (BE).
Physical and life sciences. Trapping has evolved from the classical optical tweezers, obtained with a strongly focused beam, to sub-diffractive traps taking advantage of plasmonics and subwavelength optics in general. Owing to the strong confinement, trapping of sub-micron particles have been achieved. Yet, while the approaches to produce the trapping potentials changed noticeably from classic tweezers to sub-diffractive traps, they all rely on a static conception of trapping. Indeed, the structures are optimized to produce a maximal field enhancement and confinement to enable trapping of always smaller particles. In this context we recently proposed the concept of Self-Induced Back-Action (SIBA) optical trapping. [4476]

10:45 STUDENT PRESENTATION
MEMS-based programmable reflective slit mask for multi-object spectroscopy
M. Canonica[1], F. Zamkotsian[2], P. Lanzoni[2], W. Noell[1], N. de Rooij[1]; [1]Ecole Polytechnique Fédérale de Lausanne (CH), [2]Laboratoire d'Astrophysique de Marseille (FR).
MEMS-based programmable slit masks are developed for multi-object spectroscopy in astronomy. Devices with 2048 tilting micromirrors were fabricated using multiple wafer-level bonding steps. Individual addressing is implemented for each element. [4498]

11:00 STUDENT PRESENTATION
Micro optical active spatial polarization control
F. Schaal[1], S. Weidenfeld[2], F.J. Salgado-Remacha[1], M. Rutloh[3], J. Stumpe[3], M. Jetter[2], R. Rossbach[2], P. Michler[2], C. Pruss[1], W. Osten[1]; [1]Universität Stuttgart, Institut für Technische Optik (DE), [2]Universität Stuttgart, Institut für Halbleiteroptik und Funktionelle Grenzflächen (DE), [3]Universität Potsdam, Institut für Chemie (DE).
We show a micro optical device for non-pixelated active spatial polarization control. The device contains a micro optical illumination unit for optical addressing of photoaddressable materials. The beam-shaping is done with a diffractive optical element (DOE) on the VCSEL light source surface and a second larger DOE. [4509]

11:00 - 11:30 Coffee break | **11:15 - 11:45 Coffee break**

11:30-13:15
THIN DISC AND HIGH ENERGY LASERS
Chairs: Dietmar Kracht

Invited Talk
11:30
Ultrafast and high power thin disk lasers
C. Kränkel[1,2], C.J. Saraceno[2], O.H. Heckl[2], C.R.E. Baer[2], M. Golling[2], T. Südmeyer[2], K. Beil[1], K. Petermann[1], G. Huber[1], U. Keller[2]; [1]Institute of Laser-Physics, University of Hamburg (DE), [2]Institute of Quantum Electronics, ETH Zurich (CH).
We review the recent developments of ultrafast thin disk laser oscillators with unrivaled average output powers exceeding 140 W and pulse energies of several 10 μJ. This rapid progress was supported by the development of tailored gain materials, supporting high efficiencies or pulse durations below 200 fs. [4559]

11:30-13:45
BIOPHOTONICS, MICROFLUIDICS AND OPTOFLUIDICS - continued
Chairs: tba

Invited Talk
11:30
Single Molecule Biophysics and NanoAssembly with Optofluidic Trapping
D. Erickson; Cornell University (US).
I will present our recent work on the optical trapping and manipulation of single proteins and the assembly of nanomaterials using the near-field of integrated photonic devices. Device design, materials and recent achievements will all be overviewed. [4668]

11:45-13:15
OPTICAL MICROSYSTEMS AND MICROSENSORS - continued
Chairs: tba

11:45 STUDENT PRESENTATION
Optical Measurement on a Small Aperture Liquid Lens
T. Schultheis[1,2], L. Spani Molella[1], E. Reithmeier[1,2]; [1]Leibniz Universität Hannover, Hanover Center for Optical Technologies (DE), [2]Leibniz Universität Hannover, Institute of Measurement and Automatic Control (DE).
A refractive spherical water-air boundary surface was used as a liquid lens with variable radius of curvature. The lens mapped a line resolution target onto a detector behind it. To analyze the low pass behaviour in terms of spatial frequency an USAF1951 resolution target was used. [4598]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**

12:00
2 μm Ho:YAG and Cr:ZnSe Thin Disk cw Lasers
G. Renz, J. Speiser, A. Giesen; Institute of Technical Physics, German Aerospace Center (DE).
A Thulium fiber laser pumped Ho:YAG thin disk cw laser with an output power of 15 W at a 2% Ho in YAG concentration and 7 W at 1.6% as well as a Thulium fiber laser pumped Cr:ZnSe thin disk cw laser with an output power of 0.4 W will be presented. Comparison of the output power to a Rigrod formula with Boltzmann occupation factors will be shown. [4510]

12:15
Yb:CaGdAlO$_4$ thin disk laser
S. Ricaud[1,4], B. Weichelt[2], P. Goldner[3], B. Viana[3], M. Abdou-Ahmed[2], D. Ritz[4], E. Mottay[5], F. Balembois, P. Georges[1], F. Druon[1]; [1]Laboratoire Charles Fabry de l'Institut d'Optique, CNRS, Univ.-Paris-Sud (FR), [2]Institut für Strahlwerkzeuge (IFSW), Universität Stuttgart (DE), [3]Laboratoire de Chimie Appliquée de l'Ecole nationale Supérieure de Chimie de Paris (FR), [4]FEE GmbH (DE), [5]Amplitude Systèmes (FR).
We report a continuous-wave Yb:CaGdAlO$_4$ thin disk laser, generating 30 W of output power with a slope efficiency of 41% and an optical-to-optical efficiency of 32%. [4621]

12:30 STUDENT PRESENTATION
Thin-disk KLu$_{1-x}$Tm$_x$(WO$_4$)$_2$/KLu(WO$_4$)$_2$ laser
M. Segura[1], X. Mateos[1], M.C. Pujol[1], J.J. Carvajal[1], M. Aguiló[1], F. Díaz[1], S. Vatnik[2], I. Vedin[2], U. Griebner[3], V. Petrov[3]; [1]Fisica i Cristallografía de Materials i Nanomaterials (FiCMA-FiCNA) and EMaS, Universitat Rovira i Virgili (URV) (ES), [2]Institute of Laser Physics (RU), [3]Max-Born-Institute for Nonlinear optics and Short Pulse Spectroscopy (DE).
Laser operation at 1.94 μm was achieved with epitaxial layers of 5, 10 and 15 at. % Tm doping in KLuW and several thicknesses, in a thin disk laser configuration with only two pump passes through the epitaxial layer. The maximum average output power in quasi continuous-wave regime was as high as ~1.4 W corresponding to a slope efficiency of 40%. [4595]

12:00 STUDENT PRESENTATION
Innovative opto-microfluidic platform to manipulate liquid drops and transport micro objects
S. Coppola, V. Vespini, M. Paturzo, S. Grilli, P. Ferraro; CNR Istituto Nazionale di Ottica, Unit of Napoli (IT).
A novel and interesting approach of an electrode-less microfluidic platform used to dispense liquid nanodroplet and to grip and transport micro objects driven by pyroelectric effect is demonstrated. [4590]

12:15
SERS biosensor for single-molecules detection
G. Rusciano[1], A.C. De Luca[1], G. Oliviero[2], G. Piccialli[2], G. Pesce[1], A. Sasso[1]; [1]Universita' di Napoli Federico II, Dipartimento di Scienze Fisiche, Complesso Universitario Monte S. Angelo (IT), [2]Universita' di Napoli Federico II, Dipartimento di Chimica delle Sostanze Naturali (IT).
In this work, we establish the use of Surface-Enhanced Raman Scattering (SERS) as a label-free analytical technique for direct detection of single molecules. More precisely, with this method we achieve high sensitivity which allows the detection of unlabelled G-rich DNA sequences subject to quadruplex formation. We discuss the stability of G-quadruplexes with different number of G-tetrads and also the effect of their orientation with respect the SERS substrate surface. [4646]

12:30
Optical fiber refractometer based on a long period grating and an accurate cross-sensitivities compensation system integrated into a thermo-stabilized flow cell
F. Baldini[1], M. Brenci[1], F. Chiavaioli[2], A. Giannetti[1], C. Trono[1]; [1]National Research Council, Institute of Applied Physics "Nello Carrara" (IT), [2]University of Siena, Department of Information Engineering (IT).
We describe the design and characterization of a thermo-stabilized flow cell for accurate refractive index (RI) measurements, which makes use of a long period grating (LPG) and a methodology for compensating the LPG cross-sensitivities. The experimental results show good performances in terms of refractive index sensitivity and resolution. [4555]

12:00
Photonic Micro System Integration Using Thin Glass Substrates
H. Schröder, L. Brusberg; Fraunhofer IZM (DE).
The novel packaging approach called "glassPack" is introduced as micro system integration technology. Glass is an excellent material because of matched coefficient of thermal expansion (CTE) to silicon, high thermal load, dielectricity and high optical transparency over a wide wavelength range. Commercially available thin glass foil can be used as substrate material for photonic micro systems and optoelectronic modules. Indeed, the integration of optic, fluidic, and electronic applications into one system can be realized. In this approach thin glass is the platform for photonic integrated circuits, VCSELs and photodetectors. Thus flip-chip mounted photonic devices become optically interconnected directly by 3D optical pathways inside the thin glass substrate. [4491]

12:15 STUDENT PRESENTATION
Polymeric Optofluidic Cell for Label-Free Biosensing
C. Delezoide[1], M. Salsac[2], J. Lautru[3], I. Ledoux-Rak[1], J. Zyss[3], C.T. Nguyen[1]; [1]Laboratoire de Photonique Quantique et Moléculaire, Ecole Normale Supérieure de Cachan (FR), [2]Laboratoire de Biologie et Pharmacologie Appliquée, Ecole Normale Supérieure de Cachan (FR), [3]Institut d'Alembert, Ecole Normale Supérieure de Cachan (FR).
We report an optofluidic cell integrating high-Q optical microresonators for label-free biosensing purposes. The use of polymer materials coupled to a vertical coupling configuration between the bus waveguide and the microresonator allow easy and low-cost fabrication. The realized cells were also demonstrated to be highly sensitive since a detection limit of 15 ag/mm^2 was obtained in a surface detection experiment performed with TAMRA-cadaverine molecules. [4568]

12:30 STUDENT PRESENTATION
Behavior of whispering gallery modes in glass microspheres as a function of temperature
C.J. Pérez-Rodríguez, L.L. Martin, D. Navarro-Urrios, F. Ferrarese Lupi, P. Haro-González, I.R. Martin, N.E. Capuj; Universidad de la Laguna (ES).
In this work we study the action of optical heating in the Whispering Gallery Modes (WGM) of microspheres resonators made from different composition glasses. Fluorescent intensity ratio technique is used to correlate the temperature in the glass bulk with the microsphere surface. [4593]

Hotel la Residenza

LASERS

12:45
The Lucia laser chain: An active-mirror based Yb:YAG diode pumped Solid State Laser (DPSSL) delivering 10 J at 2 Hz
T. Novo, D. Albach, M. Arzakantsyan, A. Lucianetti, B. Vincent, J-C. Chanteloup; LULI, Ecole Polytechnique, CNRS, CEA, UPMC (FR).
Amplified Spontaneous Emission (ASE) and thermal management solutions implemented to reach Lucia active-mirror Yb:YAG DPSSL 10 J/2 Hz performances will be presented. Foreseen cryogenically cooled ceramic amplifier head and its innovative low pressure helium cell will also be detailed. [4480]

13:00
Thermal limitations of volume Bragg gratings when used in lasers for spectral control
S. Tjörnhammar, B. Jacobsson, V. Pasiskevicius, F. Laurell; Royal Institute of Technology (KTH), Applied Physics (SE).
We investigated the effect of absorption in volume Bragg gratings (VBGs) and the associated temperature effects that appear when they are used as mirrors in diode pumped solid-state lasers. The primary result is an uneven longitudinal temperature distribution that causes a reduction in the reflectivity and the spectral selectivity. [4609]

13:15 - 15:30 Lunch break

Sala Auditorium, Palazzo dei Congressi

OμS I

12:45 **Invited Talk**
Liquid microdroplets on a superhydrophobic surface: A promising system for optofluidics research
A. Kiraz; Koç University, Dept. of Physics (TR).
Novel spectral tuning techniques, and organic light emitting device concepts developed using microdroplets on a superhydrophobic surface will be summarized. Recent experiments on contact angle measurements using vibrational modes of the microdroplets will also be discussed. [4481]

13:15
Photonic properties of centric diatom frustules: evolutionary advantages and technological applications
E. De Tommasi[1], L. De Stefano[1], M. De Stefano[2], I. Rea[1], I. Rendina[1]; [1]National Council for Research, Institute for Microelectronics and Microsystems, Department of Naples (IT), [2]Department of Environmental Science, Second University of Naples (IT).
A summary of the main optical and photonic properties of diatom silica walls is presented, from photonic crystal behavior to photoluminescence properties, in view of possible technological applications, mainly in sensing and optical biosensing fields. Furthermore, we focus on the confinement properties of light transmitted by single valves of *Coscinodiscuus wailesii* and other centric species. [4500]

13:30
Sub-micrometer plasmon hollow waveguides for chemical sensing applications
C. Ciminelli, F. Dell'Olio, C.E. Campanella, M.N. Armenise; Optoelectronics Laboratory, Politecnico di Bari (IT).
An innovative sub-micrometer hollow waveguide serving as microfluidic channel is proposed in this paper. It exhibits a sensitivity value exceeding 2.3 and a confinement factor in the hollow region up to 99 %. [4648]

Sala Azzurra, Palazzo dei Congressi

OμS II

12:45
Cu/p-Si Schottky Barrier Based Near Infrared Photodetector
M. Casalino, L. Sirleto, M. Iodice, M. Gioffrè, I. Rendina, G. Coppola; Istituto per la Microelettronica e Microsistemi (CNR) (IT).
We propose a near infrared all-silicon integrated photodetector based on the internal photoemission effect. Device is charactered by a responsivity of 0.08 mA/W at 1550 nm for a reverse bias of 1 V, moreover, a bandwidth in the GHz range can be estimated. [4649]

13:00
Electro-optical modulating devices based on the CMOS-compatible technology of amorphous silicon
S. Rao, F.G. Della Corte; Università "Mediterranea" di Reggio Calabria, Department of Information Science, Mathematics, Electronics and Transportations (DIMET) (IT).
We report results on a field-effect induced light modulation at λ=1.55 μm in waveguide-integrated Fabry-Perot (FP) resonating cavities. The devices are realized with the hydrogenated amorphous silicon (a-Si:H) technology ensuring an easy back-end integration with standard CMOS Integrated Circuits. [4615]

13:15 - 15:45 Lunch break

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**
	13:30 - 15:45 Lunch break	
15:30-17:00 **LASER MATERIALS AND MID-IR** *Chairs: Joerg Neumann*	15:45-16:45 **PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS** *Chairs: tba*	15:45-16:45 **APPLICATION OF OPTICAL SYSTEMS** *Chairs: tba*
15:30 Invited Talk **Ceramic lasers and laser materials toward giant micro-photonics** *T. Taira; Institute for Molecular Science (JP).* Transparent laser ceramics have been demonstrated to offer tremendous processing and design advantages in diode pumped solid-state laser field. After the review of the ceramic lasers, we'd like to discuss the next generation of high performance giant lasers as state-of-the-art micro solid-state photonics. [4644]	15:45 STUDENT PRESENTATION **Plasmonics on SOI** *A. Apuzzo[1], R. Salas-Montiel[1], M. Février[2], A. Bruyant[1], G. Lérondel[1], S. Blaize[1] ; [1]LNIO -ICD, University of Technology of Troyes, (FR), [2]IEF, University of Paris-Sud 11, CNRS, UMR 8622 (FR).* Plasmonic structures are a new and promising kind of optical waveguides capable of bridging the gap size between macroscopic optics and nanodevices as they are able to confine light radiation along metal/ dielectric interfaces beyond the subwavelength scale. In this work, we report on the fabrication and optical characterization of hybrid plasmonic/photonic circuits. Optical characterization down to the nanometre scale is achieved using an AFM-based scanning near-field optical microscope. [4543]	15:45 STUDENT PRESENTATION **Guided mode resonance in subwavelength metallo-dielectric free-standing grating for band-pass filtering** *E. Sakat[1,2], G. Vincent[1], P. Ghenuche[1,2], N. Bardou[2], S. Collin[2], F. Pardo[2], J.-L. Pelouard[2], R. Haïdar[1]; [1]ONERA The French Aerospace Lab (FR), [2]Laboratoire de Photonique et de Nanostructures (CNRS) (FR).* We present the experimental study of a free-standing metallic guided-mode resonant structure, for bandpass filtering application in the mid-infrared wavelength range. Angularly resolved transmission spectra are shown. They reveal Fano-type resonance with a high transmission peak (78%). [4517]
16:00 Invited Talk **Tm- and Ho-based femtosecond lasers for 2-μm region** *A.A. Lagatsky, C.T.A. Brown, W. Sibbett; School of Physics and Astronomy, University of St. Andrews (GB).* Recent progress in the development of ultrashort-pulse crystalline lasers operating around the 2-μm spectral region is reported. In particular, efficient femtosecond operation in Tm,Ho co-doped and Tm-doped double tungstate crystals is achieved using a SESAM mode-locking approach. [4475]	16:00 **Second Harmonic Circular Dichroism of self-organized metal nanowires arrays** *A. Belardini[1], M.C. Larciprete[1], M. Centini[1], E. Fazio[1], C. Sibilia[1], D. Chiappe[2], C. Martella[2], A. Toma[2], M. Giordano[2], F. Buatier de Mongeot[2]; [1]Dipartimento di Scienze di Base ed Applicate per l'Ingegneria, Sapienza Università di Roma (IT), [2]Dipartimento di Fisica, Università di Genova and CNISM (IT).* Here we report the experimental observation of nonlinear circular dichroism generated by self-organized gold nanowire arrays. [4577]	16:00 **Laser sintering of nanocrystalline (nc)-TiO_2 films for Dye Solar Cells (DSCs) fabrication: from process feasibility to high throughput** *G. Mincuzzi[1], L. Vesce[1], M. Schultz-Ruhtemberg[2], A. Reale[1], A. Di Carlo[1], A. Gillner[2], T.M. Brown[1]; [1]CHOSE (Centre for Hybrid and Organic Solar Energy), University of Rome-Tor Vergata (IT), [2]Fraunhofer ILT (DE).* We fabricated Dye Solar Cells with nc-TiO_2 film sintered via λ=355 nm laser with power P varying from 1 W to 7 W. A 7.1% efficient laser sintered DSC is reported for the first time. We outline the characteristic parameters required from a laser system to carry out an efficient, energetically favorable and industrially applicable process. [4610]
	16:15 **Theory and implementation of the resonance domain photonic structures** *M.A. Golub, O. Barlev, Y. Haimson; Tel Aviv University, Department of Electrical Engineering (IL).* Resonance domain periodic surface relief structures with the grating period slightly exceeding the wavelength are investigated theoretically and in experiments with direct e-beam writing. Elaborated generalization of the effective index theory to the diffractive structures predicts diffraction efficiencies approaching to 100%. [4521]	16:15 **Microoptical multi aperture cameras** *R. Leitel, A. Brückner, F. Wippermann, P. Dannberg, A. Oberdörster, A. Bräuer; Fraunhofer Institute for Applied Optics and Precision Engineering (DE).* We present the concept, optical design and prototype realization of an extremely miniaturized VGA camera module with a thickness of only 1.4 mm. The multi aperture optical system is inspired by the insect compound eye. The proposed fabrication techniques on wafer-level make it suitable for high volume applications. [4539]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**
16:30 **An overview of $Ho:KLu(WO_4)_2$ laser operating at ~2.1 μm** *V. Jambunathan[1], X. Mateos[1], M.C. Pujol[1], J.J. Carvajal[1], M. Aguiló[1], F. Díaz[1], A. Schmidt[2], U. Griebner[2], V. Petrov[2]; [1]Física i Cristal·lografía de Materials i Nanomaterials (FiCMA-FiCNA), Universitat Rovira i Virgili (URV) (ES), [2]Max-Born-Institute for Nonlinear Optics and Short Pulse Spectroscopy (DE).* In this work, we present CW laser generation in $Ho:KLu(WO_4)_2$ crystals near 2.1 μm, primarily using Tm as sensitizer ion and subsequently by in-band pumping with a home made diode-pumped Tm laser and a laser diode stack, both sources operating at 1.94 μm. With Tm laser pumping, we achieved the maximum slope efficiency of the Ho:KLuW laser that amounted to ~55%. [4572]	16:30 **Application of silicon based metamaterials: imaging, sensing and solar cell.** *V. Mocella[1], P. Dardano[1], G. De Martino[1], I. Rendina[1], S. Cabrini[2]; [1]IMM-CNR sez. Napoli (IT), [2]Molecular Foundry, Lawrence Berkeley National Laboratory (US).* In this paper we show how the extraordinary properties of the metamaterials allows a strong improvement of many photonic based devices, such as imaging with super-resolution, ultrasensitive sensors and a strong improvement of the light absorption in solar cell with metamaterial based top layer. [4603]	16:30 **Novel LED-based slim microoptical array projector for luminaires and display applications** *A. Bräuer, M. Sieler, P. Schreiber, P. Dannberg, B. Höfer; Fraunhofer Institute for Applied Optics and Precision Engineering IOF (DE).* The transmitted flux of common single-aperture projection optics scales with projector dimensions for a given light source brightness. This dependency prevents the realization of slim devices with high flux. We introduce a new multi-channel approach, called "array projection". [4515]
16:45 **Efficient core-pumped thulium-doped fibers for single frequency master oscillators working at 2000 nm band** *P. Honzatko, P. Peterka, A. Dhar, I. Kasik, O. Podrazky, V. Matejec; Institute of Photonics and Electronics AS CR (CZ).* We have developed highly thulium (Tm3+) doped fibers and demonstrated their application in single frequency master oscillators core-pumped at 1611nm. Lasing wavelength was at 1944.6nm. The slope efficiency more then 20% was achieved and a lasing threshold was about 25mW. [4557]	16:45 **Scattering of plasmonic nanoantennae at air/substrate interfaces** *L. Rindorf; Danish Technological Institute (DK).* A modified formalism is presented for finite element simulation of plasmonic nanoantennas. The formalism simplifies the simulation as well as the theoretical correspondence to the simulations. The formalism is applied to gold bow-tie nanoantennas in 3D. [4580]	
17:00 - 17:30 Coffee break		**16:45 - 17:30 Coffee break**
17:30-18:45 **OPTICAL PARAMETRIC OSCILLATORS** *Chairs: Takunori Taira*	17:30-18:15 **PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS - continued** *Chairs: tba*	17:30-18:15 **APPLICATION OF OPTICAL SYSTEMS - continued** *Chairs: tba*
17:30 **Near-degenerate continuous-wave optical parametric oscillator** *M. Vainio[1,2], C. Ozanam[1,3], L. Halonen[1]; [1]Laboratory of Physical Chemistry, Department of Chemistry (FI), [2]Centre for Metrology and Accreditation (FI), [3]École Polytechnique (member of ParisTech) (FR).* We have studied the stability and tuning characteristics of a near-degenerate continuous-wave optical parametric oscillator (cw OPO). The OPO is singly resonant and based on a volume Bragg grating, which provides single-frequency operation at signal-idler difference frequencies as small as <100 GHz. [4600]	17:30 **Tilted Bragg grating plasmonic sensors** *K.R. Daly[1], C. Holmes[2], G.D'Alessandro[1], J.C. Gates[2], P.G.R. Smith[2]; [1]School of Mathematics (UK), [2]Optoelectronics Research Centre, University of Southampton (UK).* Plasmonic sensors formed by a tilted Bragg grating in a gold coated waveguide have many advantages with respect to standard Bragg grating sensors. In this paper we develop a comprehensive theory of their mode structure and compare it to experimental results. The model can be used to optimise the sensitivity of the device. [4547]	17:30 **STUDENT PRESENTATION** **Tunable thin film resonator for efficient VCSEL-to-fiber coupling** *P. Metz, M. Krantz, M. Gerken; Institute of Electrical and Information Engineering, Christian-Albrechts-Universität zu Kiel (DE).* The capability of actively tunable thin film resonators for misalignment compensation in VCSEL-to-fiber coupling devices is investigated. The spatial shift of a Gaussian beam by a Gires-Tournois resonator on a right angle glass prism is shown both in simulations and experiments. [4596]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**

17:45
Optical parametric oscillator in the red with high pulse energy and symmetrical far field
G. Rustad, Ø. Farsund; FFI (Norwegian Defence Research Establishment) (NO).
Red pulses with >30 mJ pulse energy and <1 nm spectral bandwidth have been demonstrated using a type 2 phase matched optical parametric oscillator pumped at 532 nm. A symmetrical signal beam with beam quality M2 ~ 8 was obtained applying the principle of orthogonal critical planes with KTA and BBO crystals in the same resonator. [4567]

18:00
Continuous-wave mid-infrared optical parametric oscillator referenced to an optical frequency comb
M. Vainio[1,2], M. Merimaa[2], L. Halonen[1]; [1]Laboratory of Physical Chemistry, Department of Chemistry (FI), [2]Centre for Metrology and Accreditation (FI).
A continuous-wave optical parametric oscillator (cw OPO) operating in the mid-infrared has been referenced to a visible/near-infrared optical frequency comb through its pump and signal beams. The cw OPO has been used for sub-Doppler absolute-frequency spectroscopy of the n3 band of methane. [4599]

18:15 STUDENT PRESENTATION
Pump-dependence of spurious cascaded upconversion in broadband optical parametric generation
M. Levenius, V. Pasiskevicius, F. Laurell, K. Gallo; KTH – Royal Institute of Technology, Department of Applied Physics (ES).
We report on the possibility to affect the direction of energy transfer of cascaded sumfrequency conversion processes associated to broadband parametric generation (OPG) in periodically poled MgO:$LiTaO_3$, by means of the OPG pump. This holds promise for a coherent control of the gain profiles of optical parametric generators and amplifiers. [4545]

17:45
Cutting-edge Materials: Novel Hybrid organic/inorganic 2D Photonic Quasi Crystals
L. Petti[1], M. Rippa[1], M. Zanella[2], L. Manna[2], P. Mormile[1]; [1]Institute of Cybernetics "E. Caianiello" of CNR (IT), [2]Fondazione Istituto Italiano di Tecnologia (IT).
PQCs have fascinating optical properties lying somewhere between those of disordered and period structures. We report on nanoscale fabrication of 2D hybrid Thue-Morse PQCs consisting of air rods in a inorganic/organic nanocomposite. [4651]

18:00
Plasmonic-Photonic Resonances in Low Contrast Hybrid Metallo-Dielecric Quasicrystals
A. Crescitelli[1], A. Ricciardi[1], M. Consales[1], C. Granata[2], E. Esposito[2], V. Galdi[3], A. Cutolo[1], A. Cusano[1]; [1]Optoelectronic Division – Engineering Department, University of Sannio (IT), [2]CNR-ICIB: "E. Caianello" (IT), [3]CNR-SPIN and Waves Group, Department of Engineering, University of Sannio (IT).
We show the evidence of both plasmonic and photonic resonances excited in low contrast hybrid metallo-dielectric quasicrystal (QC) nanostructures. By comparison with periodic crystal (PC) structures with the same filling factor, a richer spectrum of resonant modes may be excited. The resonances can be tuned via high refractive index overlays and are sensible to nanolayers of low refractive index materials (SiO_2). [4504]

17:45
Underwater optical fiber hydrophones based on Fiber Bragg Gratings coated by a ring shaped overlay
M. Moccia[1], M. Consales[1], M. Pisco[1], A. Iadicicco[2], S. Campopiano[2], M. Giordano[3], V. Galdi[4], A. Cutolo[1], A. Cusano[1]; [1]Optoelectronic Division – Engineering Department, University of Sannio (IT), [2]Department of Technology, University of Naples "Parthenope" (IT), [3]Institute for Composite and Biomedical Materials, National Research Council (IT), [4]CNR-SPIN and Waves Group, Department of Engineering, University of Sannio (IT).
In this work, we report the first evidence of the resonant behavior of underwater acoustic sensors constituted by a Fiber Bragg Grating (FBG) coated by a ring shaped overlay. Hydrophone response is provided via numerical simulations and experimental proofs, as well. [4493]

18:00
MOEMS devices designed and tested for future astronomical instrumentation in space
F. Zamkotsian[1], P. Lanzoni[1], M. Canonica[2], W. Noell[2], T. Viard[3], L. Marchand[4]; [1]Laboratoire d'Astrophysique de Marseille (FR), [2]Ecole Polytechnique Fédérale de Lausanne (CH), [3]Thales Alenia Space (FR), [4]European Space Agency (NL).
MOEMS devices could be integrated in next-generation astronomical instruments for space telescopes. They have the capability to tailor the incoming light in terms of object selection with programmable slit masks, wavefront control with microdeformable mirrors, and spectrum with programmable diffraction gratings. [4516]

Tuesday, 27 September

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**
18:30 **Single and Dual Pulse Operation of Picosecond Intracavity Synchronously Pumped Optical Parametric Oscillator** *A. Zavadilová[1], V. Kubeček[1], J.-C. Diels[2], J. Sulc[1]; [1]Czech Technical University in Prague (CZ), [2]University of New Mexico, CHTM (US).* Experimental investigation of instability of the bidirectional operation in the intracavity synchronously pumped optical parametric oscillator is reported. It was shown that, depending on the OPO resonator length detuning, different operational regimes of the OPO and also of the pump laser can be achieved. [4502]		

18:30-19:30 Annual General Assembly

20:30 Conference Dinner

Notes

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	OμS I	OμS II

9:00-11:00 SEMICONDUCTOR LASERS
Chairs: Edik Rafailov

9:00 **Invited Talk**

Mode-locked Vertical-External-Cavity Surface-Emitting Semiconductor Lasers

A.C. Tropper; University of Southampton, Physics and Astronomy (GB).

Optically-pumped surface-emitting external cavity quantum well lasers combine high average power with good beam quality, and readily exhibit passive mode-locking under the influence of an intracavity Semiconductor Saturable Absorber Mirror (SESAM). These lasers have been observed to generate near transform-limited optical pulses of 60 fs duration. [4643]

9:30 **Invited Talk**

High-power ultrafast quantum-dot edge-emitting lasers

M.A. Cataluna, Y. Ding, D. . Nikitichev, E.U. Rafailov; University of Dundee, School of Engineering, Physics and Mathematics (GB).

This talk will cover our recent progress on ultrafast InAs/GaAs quantum-dot edge-emitting lasers, particularly highlighting the generation of ultrashort pulses with record-high peak power from monolithic tapered lasers, as well as high-energy and low-noise pulse generation, at low pulse repetition rates, from external-cavity lasers. [4574]

10:00

Modelling external cavity quantum-dot mode-locked lasers: a new delayed differential equation model

M. Rossetti, T. Xu, P. Bardella, I. Montrosset; Politecnico di Torino, DELEN (IT).

We propose a new model for external cavity quantum-dot mode-locked (ML) lasers, based on the numerical solution of delayed differential equations (DDE) coupled to rate equations describing carrier dynamics in the active chip. ML instabilities induced by multiple cavity resonances and the onset of harmonic ML solutions are described. [4508]

9:00-9:40 PLENARY TALK
Chairs: tba

Sala Auditorium, Palazzo dei Congressi

Optical Sculpting: advanced beam shaping and applications

K. Dholakia; University of St. Andrews (GB).

9:45-11:15 PLASMONICS, PHOTONIC CRYSTALS AND METAMATERIALS - continued
Chairs: tba

9:45 **Invited Talk**

Complex Aperiodic Nanophotonics: Engineering complexity on Optical Chips

L. Dal Negro; University of St. Andrews (GB).

I will focus on the broadband enhancement of optical fields for multi-frequency light sources, plasmon enhanced photodetectors and optical biosensors. The applications of DANS to the enhancement of nonlinear interactions on optical chips will also be discussed. Finally, our recent work on circularly symmetric light scattering, phase vortices, and planar diffraction in photonic-plasmonic aperiodic spirals with circular Fourier space will be reviewed, and its impact for the design of broadband energy harvesting elements for thin-film solar cells will be discussed. [4672]

9:45-11:00 APPLICATION OF OPTICAL SYSTEMS - continued
Chairs: tba

9:45 **Invited Talk**

Retardagraphy and its application to optical mass-storage

T. Yatagai; Center for Optical Research and Education Utsunomiya University (JP).

A technique for recording the retardance of an optical anisotropic object is proposed. The retardance pattern is converted into a polarization pattern using a quarter-wave plate and recorded on a polarization-sensitive medium. This method is called retardagraphy, which will be employed in optical mass-storage. [4482]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**
10:15 **Control of Chirp Parameter in Electroabsorption Modulator Laser Integrated with Semiconductor Optical Amplifier** *M.N. Ngo, H.T. Nguyen, C. Gosset, D. Erasme; Communications and Electronics department, Telecom ParisTech (FR).* Control of chirp parameter in Electroabsorption Modulator Laser integrated with Semiconductor Optical Amplifier is investigated to enhance the optical signal transmission in conventional Single Mode Fiber. Experimental results show the conversion of positive chirp into negative chirp under certain operating conditions. [4503]	10:15 **Broadly tunable plasmonic nanogap resonators or black plasmons** *M. Bora, A. Chang, T. Bond; Lawrence Livermore National Laboratory (US).* We present plasmonic resonant structures that are widely tunable from ultra-violet to infrared frequencies with maximum absorbance > 95% at resonance due to a highly efficient coupling with incident light. In particular we discuss their behavior in the 400-800 nm visible range for photovoltaic applications (black plasmons). [4607]	10:15 **A Versatile Linear Micromirror Array For Ultrashort Laser Pulse Shaping** *W. Noell[1], S. Weber[3], J. Extermann[2], F. Jutzi[1], L. Bonacina[2], N.F. de Rooij[1], J.-P. Wolf[2]; [1]Ecole Polytechnique Fédérale de Lausanne (EPFL), SAMLAB (CH), [2]GAP Biophotonics, Université de Genève (CH), [3]Jenoptik Optical Systems GmbH (DE).* Ultrashort laser pulses comprise a relatively large wavelength spectrum. Depending on the central wavelength, this spectrum can be modified width dispersive and phase shifting elements. We demonstrate a broadband fs-laser pulse shaper based on MEMS, which modifies the fs-pulse shape at UV and NIR wavelengths. [4542]
10:30 **Numerical Analysis of short-cavity DFB laser for 40 Gb/s transmission** *M. Vallone, P. Bardella, I. Montrosset; Politecnico di Torino, Dipartimento di Elettronica (IT).* We investigated the spectral behavior and modulation performance of a short-cavity, three-section DFB laser recently proposed by Fujitsu. We show the fundamental role of the small refractive index difference among the sections due to current injection in obtaining high single-mode yield in the fabrication process. [4548]	10:30 **Free Space Optical Interconnects using Active Optical Metamaterials** *K. Frenner[1], P. Schau[1], L. Fu[1], H. Schweizer[2], H. Giessen[2], W. Osten[1]; [1]Institute für Technische Optik, Universität Stuttgart (DE), [2]4th Physical Institute, Universität Stuttgart (DE).* Free space optical interconnects as they are used e.g. for data routing and switching have been improved through the use of active optical metamaterials. This allows to control in high resolution the position of the foci of the interconnect. [4619]	10:30 **An automated method to increase the numerical aperture of a digital holography recording set-up: challenges and achievements** *A. Pelagotti, M. Paturzo, M. Locatelli, A. Geltrude, P. Poggi, A. Finizio, P. Ferraro; CNR-INO Istituto Nazionale di Ottica (IT).* A major issue for digital holography is the limited numerical aperture which is bound by the size of available sensors. This is even more severe with IR sensors. In order to increase the numerical aperture of such systems, we developed a technique to automatically record adjacent holograms and properly stich them together. [4601]
10:45 **Influence of the saturable absorber length on the mode locking regimes of two-section quantum-dot lasers: a numerical study** *M. Rossetti, T. Xu, P. Bardella, I. Montrosset; Politecnico di Torino (IT).* We apply a new delayed differential equation model to the simulation of quantumdot mode-locked lasers. We show that, consistently with the experiments, increasing the saturable absorber to gain section length ratio, a significant pulse shortening is achieved. Insights on the gain/absorption dynamics leading to this effect are shown. [4630]	10:45 STUDENT PRESENTATION **Dynamical analysis of a coupled optical-soliton surface -plasmon system as a new type of Josephson Junction** *Y. Eksioglu, O.E. Mustecaplioglu, K. Guven; Koç University, Department of Physics (TR).* We propose that a weakly coupled optical-soliton surface-plasmon (COSSP) system can be formulated as a new type of Josephson junction. The dynamic coupling parameter between optical-soliton surface-plasmon generates remarkable features in phase space. [4537]	10:45 **Folding imaging optics into a wedge light-guide** *A.R.L Travis, T. Large, N. Emerton; Microsoft Corporation (US).* Projection and camera optics can image big screens onto micro-displays and sensor arrays but the optical path must be folded into a flat panel. A wedge light-guide does this but the light-guide itself must be folded in two if the active area is to fill the screen. We explain the problems and potential solutions. [4534]

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	**OμS I**	**OμS II**
	11:00 **Near-field calculation for non-spherical nanoparticle arrays in the framework of the T-matrix method** *C. Forestiere[1], G. Iadarola[1], L. Dal Negro[2], G. Miano[1]; [1]Department of Electrical Engineering, Università degli Studi di Napoli Federico II (IT), [2]Department of Electrical and Computer Engineering & Photonic Center, Boston University (US).* Arrays of metal nanoparticles play a key role in many nano-optical applications such as SERS substrates and light concentrators. In this work the T-matrix method (also known as Null-Field Method) has been extended in order to accurately calculate the near-field scattered by large arrays of metallic nanoparticles with non-spherical shape. The near-field scattered by arrays of more a 50 gold spheroids with different aspect ratios, sizes and arranged according to periodic and aperiodic patters are presented when they are excited by a visible radiation. [4652]	11:00 **Compressed sensing - based denoising algorithm of digital holograms recorded in microscope configuration** *P. Memmolo[1,2], I. Esnaola[3], A. Finizio[1], M. Paturzo[1], P. Ferraro[1], A.M. Tulino[2,3]; [1]CNR - Istituto Nazionale di Ottica (IT), [2]DIBET, Università degli Studi di Napoli "Federico II" (IT), [3]Wireless Communication Theory Research, Bell Laboratories (US).* Compressed Sensing (CS) states that a signal admitting a sparse representation in some basis can be perfectly acquired using a low rate acquisition process that projects the signal onto a small set of vectors incoherent with the sparsity basis. Motivated by this idea, we propose to use CS as denoising algorithm in Digital Holography (DH) for efficient amplitude and phase reconstruction. [4583]
11:00 - 11:30 Coffee break	**11:15 - 11:45 Coffee break**	
11:30-12:30 **POST-DEADLINE SESSION** *Chairs: tba*	11:45-12:30 **POST-DEADLINE SESSION** *Chairs: tba*	
11:30 - 11:45 **Post-deadline talk** **Design of high modulation bandwidth DBR lasers exploiting detuned loading and photon-photon resonance effects** *M. Vallone, P. Bardella, I. Montrosset; Politecnico di Torino, Dipartimento di Elettronica, (IT).* We propose a design procedure which exploits the detuned loading effect and the photon-photon resonance to obtain high modulation bandwidth DBR lasers. [4707]		
11:45 - 12:00 **Post-deadline talk** **Tunable quantum-dot mode-locked monolithic laser** *D.I. Nikitichev[1], M.A. Cataluna[1], Y. Ding[1], I. Krestnikov[2], D. Livshits[2], E.U. Rafailov[1]; [1]University of Dundee, School of Engineering, Physics and Mathematics, (GB), [2]Innolume GmbH, (DE).* We report tunability from 1245 nm to 1290 nm from a quantum-dot mode-locked monolithic laser, whereby the wavelength is controlled via the reverse bias applied to the saturable absorber. Throughout the tuning range, the pulse duration ranged between 3.9 ps and 11 ps, with an average power up to 23 mW. [4703]	11:45 - 12:00 **Post-deadline talk** **Spatio-temporal light shaping in 3D real-time** *J. Glückstad, D. Palima; DTU Fotonik, Dept. of Photonics Engineering (DK).* Combining our GPC-technology with temporal focusing, we can precisely stimulate single neuronal processes, neurons or groups of neurons, despite the highly complex neuronal structures. Our recent results published in Nature Methods will be outlined and the exciting perspectives it provides for the emerging fields of neurophotonics and optogenetics. [4689]	

Hotel la Residenza	Sala Auditorium, Palazzo dei Congressi	Sala Azzurra, Palazzo dei Congressi
LASERS	OμS I	OμS II

12:00 - 12:15 **Post-deadline talk**

Generation of Continuous Wave THz Radiation from a Quantum-Dot Photomixer Device

R. Leyman[1], T. Kruczek[1], N. Bazieva[1], D. Carnegie[1], G. Erbert[2], E.U. Rafailov[1]
[1]School of Engineering, Physics and Mathematics, University of Dundee (GB), [2]Ferdinand-Braun-Institute (DE).

The generation of continuous wave (CW) terahertz (THz) emission from a photomixer device based on a quantum-dot (QD) structure has been demonstrated. Two spatially combined distributed feedback (DFB) laser diodes (LD's) with single longitudinal modes at 847nm and 850nm have been used as pump sources. [4701]

12:15 - 12:30 **Post-deadline talk**

2.7 μm Single-frequency TEM00 operation of Sb-based Diode-Pumped External-Cavity VCSEL

A. Laurain, L. Cerutti, M. Myara, A. Garnache; Institut d'Electronique du Sud, CNRS UMR5214, Université Montpellier 2 (FR).

We present for the first time to our knowledge, the design, technology and performances of a single-frequency tunable Sb-based diode-pumped type-I quantum well vertical-external-cavity-surface-emitting lasers (VeCSEL) emitting at 2.7 μm operating at RT in CW in a low divergence TEM00 mode. [4693]

12:00 - 12:15 **Post-deadline talk**

Fabrication of optofluidic chips in PMMA by femtosecond laser micromachining

R. Martínez Vázquez, S.M. Eaton, G. Cerullo, R. Osellame, R. Ramponi; Istituto di Fotonica e Nanotecnologie – CNR and Department of Physics - Politecnico di Milano, Milan, (IT).

Fabrication of an integrated optofluidic chip in PMMA substrates by femtosecond laser micromachining is demonstrated. Both Fresnel lenses and microchannels have been realized, thus enabling on-chip integrated fluorescence detection. [4694]

12:15 - 12:30 **Post-deadline talk**

Optical characterization of block copolymers nanostructured thin films

A. Capretti[1,2], G.P. Pepe[1], G. Miano[2], C. Forestiere[2], C. De Rosa[3], F.Auriemma[3], R. Di Girolamo[3]; [1]SPIN-CNR and Univ. Napoli Federico II, Fac. Ingegneria, Dip. Scienze Fisiche (IT), [2]Univ. Napoli Federico II, Fac. Ingegneria, Dip. Ingegneria Elettrica (IT), [3]Univ. Napoli Federico II, Dip. Chimica (IT).

We demonstrate the existence of collective plasmonic resonances of gold nanoparticles (AuNPs) after an electromagnetic stimulation, arising from the ordered arrangement of AuNPs in a periodic array of hexagonally packed cylinders created by self-assembly of a block-copolymer (BCP). [4706]

END OF EOS TOPICAL MEETINGS

Notes

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

4th EOS Topical Meeting on Optical Microsystems (OμS'11)

Notes

OμS_4472_001
Interference band-pass infrared filter
Ya.V. Bobitski[1,2], I.Ya. Yaremchuk[2], V.M. Fitio[2]; [1]Institute of Technology Rzeszow University (PL), [2]Lviv Polytechnic National University, Department of Photonics (UA).
Structure "layer with the high refractive index – interference mirror – layer with the high refractive index" as dielectric interference filter for the infra-red region was researched. The basic spectral parameters of such band-pass filter were determined.

OμS_4483_002
Microcopy technique based on NLCs application for detecting structural defects on the surface of quartz elements
M.G. Tomilin; St.-Petersburg University of Information Technologies, Mechanics and Optics, Physics Department (RU).
The combination of optical polarizing microscope with nematic liquid crystal (NLC) layer applied on the objects' surface makes possible to increase the microscopes' power and operation functions. The example of invisible structural defects detecting on the surface of industrial quartz elements illustrate new microscope achievements.

OμS_4487_003
Optical tweezer array based on 2D photonic crystals
X. Ren, C. Wang, Y. Li, S. Liu, X. Zhang; Xiamen University, Physics Department (CN).
We describe a simple method for creating multiple optical tweezers from a single laser beam using 2D photonic crystals (PhCs). As a demonstration of this technique, we have implemented a 1μm period hexagonal lattice pattern using 700 nm 2D PhCs.

OμS_4496_004
Characterization of rough non-uniform thin films using imaging spectroscopic reflectometry
M. Ohlídal[1], I. Ohlídal[2], D. Nečas[2], D. Franta[2], J. Vodák[1], P. Nádaský[1], F. Vižďa[3]; [1]Brno University of Technology, Inst. Phys. Eng. (CZ), [2]Masaryk University, Dept. Phys. Electronics (CZ), [3]University of Defense, Department of Physics (CZ).
It is shown that imaging spectroscopic reflectometry enables us to perform the characterization of thin films exhibiting two important defects, i. e. area non-uniformity in optical parameters and boundary roughness. This is illustrated through the characterization of epitaxial ZnSe thin films.

OμS_4506_005
Good Optical Limiting Performance of Indium and Gallium Phthalocyanines in Polymer Host
A. Elmali[1], M. Yüksek[1], M. Durmuş[2], H. Gul Yaglioglu[1], T. Nyokong[3]; [1]Department of Engineering Physics, Faculty of Engineering, Ankara University (TR), [2]Department of Chemistry, Gebze Institute of Technology (TR), [3]Department of Chemistry, Rhodes University (ZA).
The optical limiting performances of tetra- and octasubstituted gallium and indium phthalocyanine complexes have been studied using the open-aperture Z-scan technique with 4 ns pulses at 532 nm. All gallium and indium complexes of phthalocyanines in film form are good candidates for optical limiting applications.

OμS_4511_006 STUDENT PRESENTATION
Confocal laser microscope writing of micro-patterns in broad-band light-emitting organic and insulating thin films
M.A. Vincenti, F. Bonfigli, D. Brogioli, R.M. Montereali; ENEA, UTAPRAD-MNF, Photonic Micro and Nanostructures Laboratory (IT).
A confocal laser scanning microscope was used for the direct laser patterning of broad-band light-emitting organic Alq_3 thin films and LiF containing color centers by using spectrally selective photobleaching effects. It was also used as characterization tool to investigate the fluorescent structures with sub-micrometric spatial resolution.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

OµS_4512_007
Lab on Fiber: Towards the Integration to the Fiber facet of Hybrid Photonic Plasmonic Crystals
A. Ricciardi[1], A. Crescitelli[1], M. Consales[1], C. Granata[2], E. Esposito[2], A. Cutolo[1], A. Cusano[1]; [1]Optoelectronic Division, Department of Engineering, University of Sannio (IT), [2]CNR-ICIB "E. Caianiello" (IT).
A 2D hybrid metallo-dielectric photonic crystal (PC) nanostructure, fabricated by innovatively applying electron beam lithography on a single mode optical fiber tip, is presented. Photonic-plasmonic resonances can be excited and tuned by acting on the PC parameters. We show some preliminary experimental studies demonstrating the high sensitivity of excited resonances to acoustic pressure waves in air.

OµS_4518_008
Security collinear holographic storage based on micro-diffusers
W.-C. Su[1], Y.-W. Chen[2], Y.-J. Chen[1], S.S. Yang[2]; [1]Graduate Institute of Photonics, National Changhua University of Education (TW), [2]Institute of Photonics Technologies, EE Dept. of National Tsing Hua University (TW).
A security collinear holographic storage using shift multiplexing is proposed and demonstrated. The security function of this storage system is based on a micro-diffuser. It offers more flexibility function during the recording processes. Storage capacity of our collinear holographic system is also investigated.

OµS_4519_009
Long Period Grating in Air-Core Photonic Crystal Optical Fibers
A. Iadicicco[1], S. Campopiano[1], A. Cusano[2], A. Cutolo[2]; [1]Department of Technology, University of Naples "Parthenope" (IT), [2]Optoelectronics Division - Engineering Department, University of Sannio (IT).
In this work, we report on the fabrication of Long Period Gratings (LPGs) in air-core photonic bandgap fibers by using pressure assisted Electrode Arc Discharge (EAD) technique. In particular, the EAD procedure enables the modification of holes in both core and cladding while the pressure actuation is used to avoid holes collapsing.

OµS_4522_010
Investigation of room-temperature Raman conversion in bulksilicon
V. Lisinetskii, S. Schrader; University of Applied Sciences Wildau, Engineering Physics (DE).
Theoretical investigation of stimulated Raman scattering in a silicon bulk crystal at room temperature is performed. Single-pass and Raman laser schemes pumped by pulses in time scale from sub-nanosecond to tens of nanoseconds are considered.

OµS_4529_011
Fabrication of the PDMS bending cones by CO_2 laser machining of PMMA, for micro-fluidics applications
M. Riahi; Laser and plasma research institute, Shahid Beheshti University (IR).
Bending holes are fabricated on a PMMA sheet by adjusting the engraving parameters in a CO_2 laser engraving system. The holes are molded by PDMS to make the bending cones. The physics behind fabrication of the bending holes and the application of the bending cones in micro-fluidics as a mixer is presented.

OµS_4530_012
Evaluation of an autonomous microfluidic system to measure arsenic in drinking water based on fluorescence detection
F. Truffer[1], D. Petrovic[1], S. Amoos[1], N. Buffi[2], P. Renaud[2], D. Merulla[3], J.R. van der Meer[3], M. Geiser[1]; [1]System Engineering, HES-SO Valais (CH), [2]Laboratory of Microsystems Engineering, Ecole Polytechnique Fédérale Lausanne (EPFL) (CH), [3]Department of Fundamental Microbiology, University of Lausanne (UNIL) (CH).
In order to built a compact autonomous microfluidic system to measure arsenic in drinking water we have designed an opto-electro-mechanical system (20x11x20cm^3) around a microfluidic system containing living cells as sensor, which collects water from the environment, senses it and communicates with a remote computer, all with its own energy and data processing.

OµS_4531_013
Double CSRR for water content detection in biological matter
L. La Spada, F. Bilotti, L. Vegni; Department of Applied Electronics, "Roma Tre" University (IT).
In this study, a low-cost, compact, and high-performing metamaterial-based biosensor operating in the THz frequency range is presented. The sensor is designed to detect the presence of water content in biological matter by spectral absorption measurements.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

OµS_4533_014
Visualization of thermal fields in anodic aluminum oxide using speckle correlation method
N.I. Mukhurov, N.S. Kazak, V.N. Belyi, N.A. Khilo, A.G. Maschenko, P.I. Ropot; B.I. Stepanov Institute of Physics, National Academy of Sciences of Belarus (BY).
The aim of this report is to develop a method of visualization of thermal field in the thin films without using infrared temperature sensors. The all-optical approach is investigated which based on mapping of two-*dimensional* correlation function of dynamic speckles produced by thermally induced strain and distortions of the film.

OµS_4535_015
Single and multi-beam evanescent Bessel tip for near-field microscopy
S.N. Kurilkina, V.N. Belyi, N.I. Mukhurov, N.S. Kazak; B.I. Stepanov, Institute of Physics of NAS of Belarus (BY).
A theory of generation of superposition of evanescent Bessel light beams at the boundary of two dielectrics is developed when conditions of the total internal reflection are fulfilled. On the base of this a virtual single and multi-beam Bessel tip with sub-wavelength resolution is proposed for near-field optical microscopy.

OµS_4536_016
Evaporable self-assembled dyes with tuned optical properties for nanostructures
K. Grytsenko[1], P. Lytvyn[1], T. Doroshenko[1], O. Navozenko[1], O. Fedoryak[1], O. Tolmachev[2], Yu. Slominskii[2], Yu. Briks[2], V. Ksianzou[3], S. Schrader[3]; [1]Institute of Semiconductor Physics (UA), [2]Institute of Organic Chemistry (UA), [3]University of Applied Sciences Wildau (DE).
Rows of the evaporable dyes, able to form covalent bond with substrate were synthesized and deposited on the PTFE/gold/ glass nanostructures, made by AFM tip. The influence of dye chemical structure, deposition conditions and substrate type on optical properties was systematically studied.

OµS_4546_017
Plasmon-resonance assisted fiber-optic resonator chemical sensor
A. Giorgini[1], S. Avino[1], G. Gagliardi[1], P. Ferraro[1], P. De Natale[1], G. Coppola[2], M. Casalino[2], M. Iodice[2], J. Homola[3]; [1]CNR-Istituto Nazionale di Ottica (INO) (IT), [2]CNR-Istituto per la Microelettronica e Microsistemi (IT), [3]Institute of Photonics and Electronics, Academy of Sciences of the Czech Republic (CZ).
We developed a novel interrogation scheme of a surface-plasmon-resonance (SPR) sensor. A thin Gold layer is fabricated for SPR excitation via laser evanescent-field interaction in prisms as well as silica fibers. The SPR chip is inserted in a high-finesse fiber-optic resonator to provide high-sensitivity for chemical sensing in various environments.

OµS_4549_018 STUDENT PRESENTATION
Optical Characterization of Standard Ultramicroscopy System
N. Jährling[1,2,3], S. Saghafi[1,2], K. Becker[1,2], H.-U. Dodt[1,2]; [1]Vienna University of Technology, FKE, Dept. of Bioelectronics (AT), [2]Center for Brain Research (MUW), Sect. Biolelectronics (AT), [3]University of Oldenburg, Dept. Neurobiology (DE)
In this project we analyzed laser beam characteristics of the standard ultramicroscopy system such as the laser intensity along the line of focus, the length of the focus at the new constructed beam waist and the laser beam uniformity along the propagation axis.

OµS_4553_019
pH measurement in esophagus and stomach with a novel optical fiber sensor
F. Baldini, G. Ghini, A. Giannetti, F. Senesi, C. Trono; IFAC-CNR, Institute of Applied Physics (IT).
A novel optical fiber tip was designed and characterized for pH detection in the gastroesophageal apparatus. A pH indicator covalently bound on controlled pore glass (CPG) was used and the CPG were immobilized at the end of the optical fibers in order to have a sensitive probe for pH measurements into the stomach.

OµS_4554_020
Compact system for cell counting and visualization using digital in-line holographic microscopy
M. Mihailescu[1,2], M. Kusko[1]; [1]National Institute for Research and Development in Microtechnologies (RO), [2]Politehnica University from Bucharest (RO).
We present our study regarding a compact system design for blood cells counting and visualization simultaneously using digital in-line holographic microscopy. The system includes a pinhole and microchannel in PDMS substrate. The geometrical parameters are established after numerical analysis of the diffracted field.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

OµS_4560_021 STUDENT PRESENTATION

Induced changes in refractive index and near –IR spectrum of polycarbonate-sio$_2$ thin films by Vis-IR lasers

H. Ehsani[1], A.M. Ghoranneviss[2]; [1]Department of Physics, Islamic Azad University, Nor branch, Mazandaran, Iran (IR), [2]Plasma Research Center, Islamic Azad University, Science and Research Branch, Mazadaran, Iran (IR).

Polycarbonate lenses are the largest alternatives used in modern lenses. Because of their great transparency and high infraction index, polycarbonate lenses can bend light at much higher degrees than other forms of plastic lenses. In this paper the effects of Vis-IR laser on refractive index and near -IR spectrum of polycarbonate have been investigated.

OµS_4562_022 STUDENT PRESENTATION

Manifestation of phase mask sampling in spiral phase contrast imaging

M. Baránek, Z. Bouchal; Department of Optics, Palacký University (CZ).

Spiral phase contrast imaging was recently proposed for a strong edge contrast enhancement in optical imaging of amplitude and phase objects. In this paper, phenomena that are manifested in real experiments due to defocusing and sampling of the spiral phase mask are discussed.

OµS_4571_023

Scanning optical vortex microscope

J. Masajada, A. Popiołek-Masajada, I. Augustyniak; Wroclaw University of Technology, Institute of Physics (PL).

Scanning vortex microscope is a system in which sample is scanned by a beam carrying optical vortex. The state of the art of vortex microscopy is presented in brief. We also show how to scan the sample just by moving the optical vortex inside the laser beam. The possible applications of scanning vortex microscopy are discussed.

OµS_4573_024 STUDENT PRESENTATION

Characterizing the effects of coherent laser beams and noncoherent LED beams on annihilation of bread mould fungus

R. Penjweini[1,2], K.W. Kratky[1], H.-U. Dodt[2], S. Saghafi[2]; [1]Physics of Physiological Processes, Faculty of Physics, University of Vienna (AT), [2]Department of Bioelectronics, Institute of solid state Electronics, Technical University of Vienna (AT).

In this paper, Spectrophotometric and Fluorescence Microscopic techniques are employed to detect the bread mould fungus. The effects of coherent beams (laser) and non-coherent beams (LEDs) on eradication of bread mould fungus are investigated. It is shown that green beams generated from second harmonics of Nd:Yag and green LED with an incident dose of 370 mJ/cm^2 provides the optimal effects.

OµS_4591_025

Instabilities in Kerr-nonlinear coupled microring resonators

J. Petráček; Institute of Physical Engineering, Brno University of Technology (CZ).

We investigate stability of steady-state solutions for Kerr-nonlinear structures consisting of coupled microring resonators. We present numerical examples that demonstrate existence of self-pulsing and chaotic solutions.

OµS_4594_026

Diffractive Linear Beam Splitters with Sub-Micro Structures

M. Ferstl, C. Kratz; Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut (DE).

Various linear beam splitters either with a high fan-angle or generating a high number of diffraction orders have been realized as binary phase gratings with critical dimensions down to 110 nm. Rigorous simulation results from Fourier Modal Methods as well as results from scalar theory are compared to the actual measurements.

OµS_4597_027

Edge Artefacts in Confocal Microscopy

M. Rahlves[1], R. Gillhaus[2], E. Reithmeier[1,2]; [1]Leibniz Universität Hannover, Hannover Center for Optical Technologies (DE), [2]Leibniz Universität Hannover, Institute of Measurement and Automatic Control (DE).

We analyse the edge response of a high NA confocal microscope by means of a numerical model based on Debye's theory and the rigorous coupled wave analysis. Confocal image stacks were simulated for various step heights, numerical aperture sizes and polarisation states of the illuminating light source.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

OμS_4604_028
Fano resonances in negative refracting photonic crystal
P. Dardano, M. Gagliardi, M. Iodice, V. Mocella; IMM-CNR Unità di Napoli (IT).
In this paper we present the experimental evidence of Fano dielectric resonances in a photonic crystal (PhC) with a negative refractive behavior. In this kind of metamaterial a resonance is excited and determine the anomalous properties behaving as a polaritonic resonance in metallo -dielectric even if this is a pure dielectric properties without any free carrier for the frequencies where effective refractive index is negative.

OμS_4611_029
Dynamic Holographic Optical Tweezers for biological inspection
L. Miccio[1], F. Merola[1], P. Memmolo[1], P. Ferraro[1], P. Netti[2]; [1]Istituto Nazionale di Ottica del CNR (IT), [2]Interdisciplinary Research Centre in Biomaterials – CRIB University of Naples Federico II (IT).
Holographic Optical tweezers is realized to trap biological specimen. Algorithm improvement for suitable trapping is presented besides interferometric measurement of trapped object.

OμS_4614_030
Determination of light scattering in water vapour by the use of simulations of scattering in fog
K. Epple[1,3], A. Gröning[2], M. Tahedl[2], M. Pfeffer[1]; [1]University of Applied Sciences Ravensburg-Weingarten, Optische Systemtechnik (DE), [2]ifm electronic GmbH (DE), [3]wenglor sensoric gmbh (DE).
Water droplets affect the performance of optical sensors. In this paper the scattering of light by small water droplets in the work environment is being studied. It is shown that the applied method for the simulations is confirmed by test results. It is assessed that water vapour is comparable to moderate fog with a 170 times higher density.

OμS_4623_031
All-optical modulating device based on the CMOS-compatible technology of amorphous silicon
S. Rao[1], F.G. Della Corte[1], C. D'Addio[1,2]; [1]Università "Mediterranea" di Reggio Calabria – D.I.M.E.T. (IT), [2]Institute for Microelectronics and Microsystems – Consiglio Nazionale delle Ricerche (IMM-CNR) - Unit of Napoli (IT).
We demonstrate all-optical modulation at the wavelength of l=1.55 mm in low loss hydrogenated amorphous silicon (a-Si:H) waveguides. The infrared absorption (~20 dB) exploits the photoinduced free carriers generated by 532 nm pump laser pulses. Characteristic rise and fall times of ~20 ns were obtained.

OμS_4637_032
Fabrication, performance and modeling of critical-angle transmission gratings
M.L. Schattenburg, R.K. Heilmann, A. Bruccoleri, P. Mukherjee; MIT Space Nanotechnology Laboratory, Massachusetts Institute of Technology (US).
In this poster we present details of recent nanofabrication results and show experimental results of synchrotron diffraction efficiency measurements which are compared to computer modeling using coupled-mode electromagnetic calculations.

OμS_4641_033
Optical properties of carbon nanostructures
G. Speranza[1], L. Minati[1], S. Torrengo[1], M. Ferrari[2], A. Chiasera[2], F. Baldini[3], G. Ghini[3]; [1]FBK (IT), [2]CNR-IFN, CSMFO Lab. (IT), [3]CNR-IFAC (IT).
Oxidized short multi-walled carbon nanotubes were produced by strong acid treatment with the aid of sonication. The carbon nanostructures are luminescent in the visible range. The luminescence is probably due to the presence of defects sites on the surface of these carbon nanostructures.

OμS_4645_034
An Optical Electromagnetic Field Sensor for Aerospace and Distributed Antenna Systems Monitoring
M. Medugno, I. Rendina; Consiglio Nazionale delle Ricerche, Institute for Microelectronics and Microsystems (IT).
Electromagnetic monitoring of communication devices in space platforms and over large scale RF terrestrial systems is a critical task, in some cases approached with expensive satellite network systems. We propose an integrated optical device enabling an affordable electromagnetic field sensing in the Fresnel region. Such physical sensor is suitable for monitoring critical structures in aerospace and distributed antenna systems. The sensor theoretical bases, its technological implementation steps and characterization, and some applications to terrestrial and aerospace field monitoring are discussed.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

OµS_4647_035
Integrated optical sensor array for measuring amplitude and phase of electric fields in radiating systems
C. Ciminelli, F. Dell'Olio, M.N. Armenise; Optoelectronics Laboratory, Politecnico di Bari (IT).
An array of E-field lithium niobate waveguide sensors is proposed in this paper. Each element of the array, allowing the simultaneous estimation of both module and phase of the field, has a bandwidth of several GHz and a resolution less than 1 mV/m.

OµS_4650_036
Numerical analysis of luminescent induced solitonic channel
R. Passier[1], M. Alonzo[1], E. Fazio[1]; [1]Ultrafast Photonics Laboratory, Dipartimento di Scienze di Base ed Applicate per l'Ingeneria, Sapienza Università di Roma and CNISM (IT).
In this paper we discuss numerical results, efficiency and scattering losses of a luminescent spatial soliton (LISS) waveguide induced in lithium niobate obtained by photorefractive and Pockels effects. We demonstrate via numerical results the possibility to induce low loss waveguides with a loss ratio as low as 0.05 dB/cm, confirming the high potential of the LISS for all-optical routing applications.

OµS_4680_037
Direct Visualization of the Axial Phase Evolution of Light Fields Emerging from Microstructures
M.-S. Kim, T. Scharf, H.P. Herzig; Ecole Polytechnique Fédérale de Lausanne (EPFL) (CH).
We investigate the axial phase evolution of light emerging from microstructures. The high-resolution interference microscope (HRIM) allows to record three-dimensional (3D) phase distributions in differential and propagation modes along the longitudinal direction. We apply this differential-mode HRIM to study the axial phase evolution of particular cases of microstructures, for instance, the photonic nanojet generated by a diecectric microsphere and the spot of Arago created by a micrometer-size metallic disc.

OµS_4695_038 STUDENT PRESENTATION
Optical surveillance of windows
R.K. Hjelmeland, L.E. Helseth; University of Bergen, Institute of Physics and Technology (NO).
The objective is to design a model system for investigating pollution on optical windows.

OµS_4738_039
SPR in Plastic Optical Fiber: a simple geometry for low cost biosensors
N. Cennamo[1], D. Massarotti[3], L. Conte[1], L. Zeni[1,2]; [1]Second University of Naples, Dept. of Information Engineering, (IT); [2]CNR-IREA (IT); [3]University of Naples "Federico II", Dept. of Physical Sciences, (IT).
In this paper, an optical sensor system based on Surface Plasmon Resonance (SPR) at the interface of a liquid sample and a sandwich of a thin gold film and a dielectric buffer deposited on half of the exposed core of a plastic optical fiber, is presented. This has proven to be a suitable geometry for measuring the refractive indexes of liquids whose refractive index falls around 1.35. Furthermore, the proposed device is low cost and relatively easy to implement, so it may be particularly attractive for biosensing applications.

ETML_4444_001 STUDENT PRESENTATION
Side-pumped slanted faces of high power Yb: YAG\YAG thin-disk laser
H. Aminpour, M.T. Mehrabani, I. Mashaiekhy Asl; Iranian National Center of Laser Science and Technology (INLC) (IR).
We present a slanted faces of thin-disk composite Yb:YAG\YAG laser which is sidepumped by four non-symmetric hollow-ducts. Not only the pump light distribution and the absorption efficiency, but also the resulting optical efficiency and output power of our modeling have been calculated by using Monte-Carlo ray tracing and Finite Element Analysis (FEA) methods.

ETML_4454_002 STUDENT PRESENTATION
Quasi-Cavity performance used for end-pumped Thin-disk lasers
H. Aminpour[1], R. Aghbolaghi[1,2], A. Ghaedzadeh[1], I. Mashaiekhy Asl[1]; [1]Iranian National Center of Laser Science and Technology (INLC) (IR), [2]Department of Physics, Guilan University (IR).
We used two types of quasi-cavity equipped on both sides with mirrors and a transparent hole at their centers. We report the predicted thermo-optical behavior of the quasi-cavity by using FEA method. We present a composite diamond / YAG crystal quasi-cavity for better performance in high power end-pumped thin – disk laser.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

2nd EOS Topical Meeting on Lasers (ETML'11)

Notes

ETML_4466_003
Optimization of SFUR optical cavity for high power lasers with moderate gain
A.M. Orishich[1], P.A Statsenko[2], V.B. Shulyatyev[1]; [1]Institute of Theoretical and Applied Mechanics, Russian Academy of Sciences (RU), [2]Institute of Laser Physics, Russian Academy of Sciences (RU).
Numerical and experimental optimization of the self-filtering unstable resonator (SFUR) was performed for moderate-gain lasers in terms of beam quality, feedback and mode volume. Some design features of SFUR cavity concerning of the optimum choice of mirror size and misalignment sensitivity were also considered.

ETML_4486_004
Development of azobenzene-containing materials for luminescent holographic structures and distributed feedback lasers
L.M. Goldenberg[1], V. Lisinetskii[1], Y. Gritsai[2], J. Stumpe[3], S. Schrader[1]; [1]University of Applied Science Wildau (DE), [2]Institute of Thin Film Technology and Microsensorics (DE), [3]Fraunhofer IAP (DE).
Using a number of azobenzene-containing materials (covalently or ionically bound and host-guest systems) strongly luminescent films were manufactured. The films exhibited amplified spontaneous emission (ASE) and were capable of producing luminescent surface relief gratings (SRG) via holographic inscription.

ETML_4514_005
Laser buildup analysis and performance optimization of a Vertical External Cavity Surface-emitting Organic Laser (VECSOL)
H. Rabbani-Haghighi, A. Siove, S. Chénais, S. Forget; Laboratoire de Physique des Lasers, Université Paris 13 / CNRS (FR).
Vertical External Cavity Surface Emitting Organic Lasers (VECSOLs) gather broad tunability in the visible, low cost, power scalability and high beam quality. Relying on a dynamical numerical simulation, a record energy conversion efficiency of 57% is experimentally demonstrated.

ETML_4520_006 STUDENT PRESENTATION
Calculation of heat generation in a 100 J cryogenically cooled multi-slab amplifier operating at 10 Hz for ELI and HiLASE projects
M. Sawicka[1], M. Divoky[1], J. Novak[2], B. Rus[2], T. Mocek[1]; [1]HiLASE Project (CZ), [2]ELI – Beamlines Project (CZ).
A 3D ray-tracing model for calculation of stored energy, heat deposition and amplification in the cryogenically cooled Yb:YAG multi-slab amplifier is presented. It shows 6 times increase in heat generation in the slab when absorptive Cr:YAG cladding for ASE management is used.

ETML_4524_007
Temporal and Spectral Characteristics of Pulsating, Erupting and Creeping Solitons Under Higher Order Effects
S.C.V. Latas, M.F.S. Ferreira; Department of Physics, University of Aveiro (PT).
We investigate numerically the characteristics of pulsating, erupting and creeping soliton solutions of a complex Ginzburg-Landau equation (CGLE), including the thirdorder dispersion, intrapulse Raman scattering and self-steepening effects. For some ranges of the parameter values they are transformed into fixed-shape solitons.

ETML_4532_008
Nonlinear optical switch for laser Q-switching based on cascaded long-period fiber gratings in Yb-doped fiber and fiber Bragg grating
P. Peterka[1], P. Honzátko[1], R. Slavík[1,3], P. Navrátil[1,2], P. Zahradník[1,2]; [1]Institute of Photonics and Electronics AS CR, v.v.i. (CZ), [2]Czech Technical University, Faculty of Nuclear Sciences and Physical Engineering (CZ), [3]on leave in Optoelectronic Research Centre, University of Southampton (GB).
We propose an all-fiber Q-switched fiber laser in which the optical switch exploits interplay between resonant nonlinearity of a section of ytterbium-doped fiber and transmission of fiber gratings combination. Switching characteristics of the nonlinear switch are analyzed using numerical model.

POSTER SESSION | Monday, 26 September, 19:15-20:30 | The patio of the hotel la Residenza

Notes

ETML_4544_009 STUDENT PRESENTATION

Optical properties of composite Nd:YAG ceramic slab laser active element with collinear zig-zag pumping

A. Aleknavičius[1,2], A. Michailovas[1,2], M. Gabalis[1], V. Girdauskas[3]; [1]Center for Physical Sciences and Technology, Institute of physics (LT), [2]Ekspla (LT), [3]Vytautas Magnus University, Faculty of Natural Sciences (LT).

Experimental results of composite slab laser active element application for generation and amplification is presented. Measured gain, lasing parameters and wave front aberrations will be presented.

ETML_4552_010

Waveguide lasers in Tm3+-doped KY1-x-yGdxLuy(WO_4)

G. Lifante[1], W. Bolaños[2], J.J. Carvajal[2], X. Mateos[2], G.S. Murugan[3], A. Subramanian[3], J.S. Wilkinson[3], E. Cantelar[1], M. Aguiló[2], F. Díaz[2]; [1]Advanced Materials for Integrated Guided Optics (AMIGO), Departamento de Física de Materiales, Universidad Autónoma de Madrid (ES), [2]Física i Cristal·lografía de Materials i Nanomaterials (FiCMA-FiCNA), Department de Química Física i Inorgànica, Universitat Rovira i Virgili (ES), [3]Optoelectronics Research Centre, University of Southampton (GB).

Recent results on the fabrication and characterization of waveguide lasers on monoclinic potassium double tungstates are presented. Using as guiding material a Tm-doped $KY_{1-x-y}Gd_xLu_y(WO_4)_2$ lattice matched layer grown on a $KY(WO_4)_2$ substrate by Liquid Phase Epitaxy (LPE), laser oscillation in CW and in Q-switching regimes at ~1.84 μm, in slab and channel waveguides, is demonstrated.

ETML_4569_011

Two-photon pumped organic microcavity laser

M. Sudzius, M. Teich, V.G. Lyssenko, S.I. Hintschich, H. Fröb, K. Leo; Institut für Angewandte Photophysik, Technische Universität Dresden (DE).

We report on an optically pumped microcavity laser based on vacuum-deposited thin Alq_3:DCM organic film. Laser emission was achieved due to the two-photon absorption of an infrared pump beam. Threshold analysis and independent z-scan measurements point to an extremely high two-photon absorption coefficient of our organic layer.

ETML_4588_012 STUDENT PRESENTATION

Laser emission at 1060 nm in Nd^{3+} doped glass microspheres without coupling devices

L.L. Martin, D. Navarro-Urrios, F. Ferrarese Lupi, C.J. Pérez-Rodríguez, P. Haro-González, I.R. Martín, N.E. Capuj; Universidad de la Laguna (ES).

Microspheres of Barium Titano Silicate glass, doped with Nd^{3+} ions have been made and have achieved laser emission at 1064 nm when pumped at 514 nm using low pump power at room temperature and detecting without any coupling device.

ETML_4605_013

Light-beam spatial filtering in a three-dimensional medium index contrast photonic crystals

M. Peckus[1], L. Maigyte[2], M. Rutkauskas[3], M. Malinauskas[3], V. Sirutkaitis[3], K. Staliunas[2,4]; [1]Center for Physical Sciences and Technology (LT), [2]Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya (ES), [3]Laser Research Center, Dept. Of Quantum Electronics, Vilnius University (LT), [4]Institució Catalana de Reserca i Estudis Avançats (ICREA) (ES).

Three-dimensional photonic crystals with woodpile structure and lattice period varying linearly in space are demonstrated to exhibit spatial filtering effect of light beams. Medium index contrast photonic crystals were fabricated using laser multi-photon polymerization technique.

EARLY-BIRD REGISTRATION FOR THE

EOS TOPICAL MEETINGS AT CAPRI 2011

26 - 28 September 2011
Capri, Italy
www.myeos.org/events/capri2011

Please return this form by fax to
+49 (0)511 277 2699
or register online at
www.myeos.org/shop

PLEASE TICK OFF YOUR PREFERRED TOPICAL MEETING

- ❑ 4th EOS Topical Meeting on Optical Microsystems (OμS'11)
- ❑ 2nd EOS Topical Meeting on Lasers (ETML'11)

REGISTRATION CATEGORY

The full-time-registration for OμS'11 and ETML'11 includes admission to both Topical Meetings, a digest CD-Rom with the complete volume of accepted abstracts of both Topical Meetings and lunches on the 26 and 27 September.

Early-Bird registration (until 12 September)	**Universities, private persons, German and Non-EU companies and non-university research institutes**	**EU companies and EU non-university research institutes (except Germany)**
Early-bird registration for members	❑ **450 €** (incl. 19% VAT)	❑ **378.15 €*** (excl. VAT, VAT no. required)
Early-bird registration for non-members	❑ **500 €** (incl. 19% VAT)	❑ **420.17 €*** (excl. VAT, VAT no. required)
Early-bird registration for student members Copy of your current student ID required.	❑ **290 €** (incl. 19% VAT)	❑ **243.70 €*** (excl. VAT, VAT no. required)
Early-bird registration for student non-members Copy of your current student ID required.	❑ **300 €** (incl. 19% VAT)	❑ **252.10 €*** (excl. VAT, VAT no. required)
Early-bird registration for one-day No digest CD-ROM included. This can be purchased separately: You may directly order the digest below or purchase it on-site. Please select the date: ❑ 26 September ❑ 27 September ❑ 28 September	❑ **260 €** (incl. 19% VAT)	❑ **218.49 €*** (excl. VAT, VAT no. required)
	***PLEASE NOTE:** Registrations from companies and non-university research institutes registered in EU countries (except Germany) are exempted from VAT, **if VAT no. is given.** **VAT no.:** _____	
Extra digest (CD-ROM)		
Including the complete volume of accepted abstracts of OμS'11 and ETML'11	❑ 65 € **member rate** (incl. 7% VAT) ❑ 75 € **non-member rate** (incl. 7% VAT)	❑ 60.75 € **member rate*** (excl. VAT, VAT no. required) ❑ 70.09 € **non-member rate*** (excl. VAT, VAT no. required)

❑ **I have read and accept the General Terms and Conditions of the EOS - Events & Services GmbH at:**
http://www.myeos.org/aboutus/terms_and_conditions

PLEASE FILL IN YOUR NAME AND ADDRESS

❑ Ms. ❑ Mr. _____ _____ _____
Title First name Name

_____
Company

EARLY-BIRD REGISTRATION FOR THE

EOS TOPICAL MEETINGS AT CAPRI 2011

26 - 28 September 2011
Capri, Italy
www.myeos.org/events/capri2011

Please return this form by fax to
+49 (0)511 277 2699
or register online at
www.myeos.org/shop

Street

City | Zip/Postal code | Country

Telephone | Fax

Email address | Homepage

PAYMENT OPTIONS

1) CREDIT CARD PAYMENT

Payment shall be made in € by credit card. If bank transfer is preferred see details below.

Charge to my: Mastercard[1] ❑ VISA[1] ❑ Eurocard[1] ❑ American Express[2] ❑

Card No.: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date: _____

Verification No.: _____

[1]**Mastercard, Visa, Eurocard:** The final 3-digit number located on the back of your credit card.]
[2]**American Express:** The four small numbers printed on the front of your card, above the last few embossed numbers.]

Name of credit card holder: _____

Signature: _____

Date: _____

2) PAYMENT BY BANK TRANSFER

❑ I wish to pay by bank transfer, please send me the invoice and banking details.

Please note: For payment via bank transfer we charge 15.00 € handling fee.
The full registration fee must arrive at the EOS bank account before the start of the meeting.
Please note that all bank fees must be paid by the attendee.

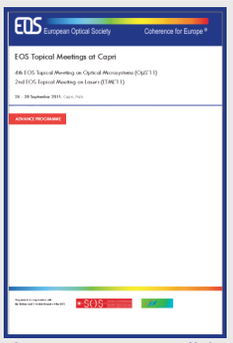
CANCELLATION POLICY

Requests for cancellation must be made in writing to the EOS Office (address see below). Refunds are subject to a processing fee of 50 €.

Cancellations received **by 15 September 2011:** full refund minus processing fee (50 €).
Cancellations received **after 15 September 2011:** no refund.

SPONSORING OPPORTUNITIES

Present your products and services in a beautiful Mediterranean atmosphere and reach your target group at the EOS Topical Meetings at Capri!



The programme will be available as electronic version on the web a long time in advance to the topical meetings and as print version on-site.

Book a manned or unmanned table-top display to present your products and services to our attendees!

Book the reception sponsorship package and make sure our attendees remember your company!

Programme advertising	
on the backcover (4/4 colours)	1200 €
on the inside backcover (4/4 colours)	900 €
on the inside front cover (4/4 colours)	900 €
1/1 page in the programme (b/w)	500 €
1/2 page in the programme (b/w)	300 €
Table Top	
unmanned	550 €
manned	850 €
Coffee break	
sponsoring for 1 Topical Meeting	800 €
sponsoring for both Topical Meetings	1300 €
Conference Dinner sponsoring	2000 €
Delegate T-Shirts	1500 €
Delegate bag/folder inserts	650 €
Electronic advertising at event websites	
180 x 600 px, fixed	1350 €
180 x 400 px, fixed	1000 €
180 x 200 px, fixed	535 €

All prices are indicated net plus 19% VAT if applicable.
For more information please see the sponsoring reservation form next page.

10% DISCOUNT

EOS corporate members receive a 10 % discount!

Not an EOS corporate member yet? Purchase your corporate membership (fee: 300 € per year) at:
ww.myeos.org/shop

INDIVIDUAL SPONSORSHIP PACKAGES

No sponsoring or advertising offer suit you? We will be pleased to work with you on an individual package!

Contact
capri@myeos.org

Contact

EOS - Events & Services GmbH
Pamela Klages
Garbsener Landstr. 10
30419 Hannover
Germany

Phone: +49 (0)511 277 2678
Fax: +49 (0)511 2788 119

klages@myeos.org
www.myeos.org/events/capri2011

SPONSORSHIP/ADVERTISING RESERVATION FOR THE

EOS TOPICAL MEETINGS AT CAPRI 2011

26 - 28 September 2011
Capri, Italy
www.myeos.org/events/capri2011

Please return this form by fax to
+49 (0)511 277 2699
or register online at
www.myeos.org/shop

SPONSORSHIP/ADVERTISING OPPORTUNITIES Please select your preferred sponsorship/advertising	**Universities, private persons, German and Non-EU companies and non-university research institutes**	**EU companies and EU non-university research institutes (except Germany)**
Programme advertising** on the backcover (4/4 colours) on the inside backcover (4/4 colours) on the inside front cover (4/4 colours) 1/1 page in the programme (b/w) 1/2 page in the programme (b/w)	(incl. 19% VAT) ❑ **1428.00 €** ❑ **1071.00 €** ❑ **1071.00 €** ❑ **595 .00 €** ❑ **357.00 €**	(excl. VAT, VAT no. required) ❑ **1200 €*** ❑ **900 €*** ❑ **900 €*** ❑ **500 €*** ❑ **300 €***
Table Top* unmanned manned	(incl. 19% VAT) ❑ **654.50 €** ❑ **1011.50 €**	(excl. VAT, VAT no. required) ❑ **550 €*** ❑ **850 €***
Coffee break* sponsoring for 1 Topical Meeting sponsoring for both Topical Meetings **Conference Dinner sponsoring***	(incl. 19% VAT) ❑ **952.00 €** ❑ **1547.00 €** ❑ **2380.00 €**	(excl. VAT, VAT no. required) ❑ **800 €*** ❑ **1300 €*** ❑ **2000 €***
Delegate T-Shirts* **Delegate bag/folder inserts***	(incl. 19% VAT) ❑ **1785.00 €** ❑ **773.50 €**	(excl. VAT, VAT no. required) ❑ **1500 €*** ❑ **650 €***
Electronic advertising at event websites* 180 x 600 px, fixed 180 x 400 px, fixed 180 x 200 px, fixed	(incl. 19% VAT) ❑ **1606.50 €** ❑ **1190.00 €** ❑ **636.65 €**	(excl. VAT, VAT no. required) ❑ **1350 €*** ❑ **1000 €*** ❑ **535 €***
* Cancellations received by 2 September 2011: full refund minus processing fee after 2 September 2011: no refund. ** Cancellations received before print: full refund minus processing fee after print: no refund.	*PLEASE NOTE: Bookings from companies and non-university research institutes registered in EU countries (except Germany) are exempted from VAT, if VAT no. is given. VAT no.: _____	

❑ **I have read and accept the General Terms and Conditions of the EOS - Events & Services GmbH at:**
http://www.myeos.org/aboutus/terms_and_conditions

PLEASE FILL IN YOUR NAME AND ADDRESS

Company _____ URL _____

❑ Ms. ❑ Mr. Title _____ First name _____ Name _____

Street _____

City _____ Zip/Postal code _____ Country _____

Telephone _____ Fax _____ E-Mail _____

SPONSORSHIP/ADVERTISING RESERVATION FOR THE

EOS TOPICAL MEETINGS AT CAPRI 2011

26 - 28 September 2011
Capri, Italy
www.myeos.org/events/capri2011

Please return this form by fax to
+49 (0)511 277 2699
or register online at
www.myeos.org/shop

PAYMENT OPTIONS

1) CREDIT CARD PAYMENT

Payment shall be made in € by credit card. If bank transfer is preferred see details below.

Charge to my: Mastercard[1] ❑ VISA[1] ❑ Eurocard[1] ❑ American Express[2] ❑

Card No.: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date: _____

Verification No.: _____

[1]**Mastercard, Visa, Eurocard:** The final 3-digit number located on the back of your credit card.]
[2]**American Express:** The four small numbers printed on the front of your card, above the last few embossed numbers.]

Name of credit card holder: _____

Signature: _____

Date: _____

2) PAYMENT BY BANK TRANSFER

❑ I wish to pay by bank transfer, please send me the invoice and banking details.

Please note: For payment via bank transfer we charge 15.00 € handling fee.
The full registration fee must arrive at the EOS bank account before the start of the meeting.
Please note that all bank fees must be paid by the attendee.

CANCELLATION POLICY

Cancellations: Requests for cancellations must be made in writing to the EOS Office (address see at the end of this page). Refunds are subject to a processing fee of 10% of the total amount.

* Cancellations received
by 2 September 2011: full refund minus processing fee
after 2 September 2011: no refund.

** Cancellations received
before publication of the advertising: full refund minus processing fee
after publication of the advertising: no refund.

AGREEMENT

The signee, authorised to sign this agreement on behalf of his/her company, hereby agrees to the above listed policies and authorises EOS - Events & Services GmbH to reserve the above chosen sponsorship/advertising opportunity during the EOS Conferences OMS'11 and ETML'11, 26 - 28 September 2011, Capri, Italy.

Date _____ Signature _____

1st EOS Topical Meeting on Micro- and Nano-Optoelectronic Systems

Ringhotel Munte am Stadtwald, Bremen, Germany | 7 - 9 December 2011
www.myeos.org/events/bremen2011 | bremen@myeos.org

DO 2012
8th EOS Topical Meeting on Diffractive Optics

Delft University of Technology, Delft, Netherlands | 27 February - 1 March 2012
www.myeos.org/events/do2012 | do2012@myeos.org

PSDM 2012
1st EOS Topical Meeting on Photonics for Sustainable Development - Focus on the Mediterranean

Ramada Plaza Tunis, Tunis, Tunisia | 31 March - 3 April 2012
Deadline for abstract submission: 5 December 2011
www.myeos.org/events/psdm2012 | psdm2012@myeos.org

ANGEL 2012
2nd Conference on Laser Ablation and Nanoparticle Generation in Liquids

Hotel Caparena in Taormina, Taormina (Sicily), Italy | 22 - 24 May 2012
www.myeos.org/events/angel2012 | angel2012@myeos.org

AIT 2012
6th EOS Topical Meeting on Advanced Imaging Techniques

Hyères - Southern Alps (Provence), France | 2 - 5 July 2012
www.myeos.org/events/ait2012 | ait2012@myeos.org

EMVPO 2012
6th EOS Topical Meeting on Visual and Physiological Optics

University College Dublin (UCD), Dublin, Ireland | 20 - 22 August 2012
Deadline for abstract submission: 30 March 2012
www.myeos.org/events/emvpo2012 | emvpo2012@myeos.org

EOSAM 2012
EOS Annual Meeting 2012

Aberdeen Exhibition and Conference Centre, Aberdeen, Scotland | 25 - 28 September 2012
www.myeos.org/events/eosam2012 | aberdeen@myeos.org

For more information about EOS organized and co-sponsored events, please go to www.myeos.org/events.

Should you wish to be kept informed about an EOS organized event, please send an email with your contact details to the above mentioned email address.

JOURNAL OF
THE EUROPEAN
OPTICAL SOCIETY
RAPID PUBLICATIONS

European Optical Society

www.jeos.org
Journal of The European Optical Society Website

www.myeos.org
The European Optical Society Website

Publish your research

....with JEOS:RP

> open access journal

> rapid publication

> professional peer-review

> publicity & international readership

> listed with ISI Journal Citation Reports

> individual author support

> reasonable publication rates

Regardless the length of the articles, the regular publication rates are:

350 € for EOS members*

400 € for non-members

* Associate members are requested to upgrade to a full membership first (12.50 €/year).

Discounted publication rates

for attendees of all EOS Events

The paper submitted must be an original contribution that is connected to the topics of the EOS event.

Publication rates

280 € (member rate)

320 € (non-member rate)

Submission deadline

02 December 2011

JEOS:RP - the Online Journal of the European Optical Society Rapid Publications
Contact and more information:
jeos-rp@myeos.org

www.jeos.org