

## SESSION 11

LOCATION: ROOM 313 (SOUTH LEVEL 3) ..... WED 10:30 AM TO 1:00 PM

### ZnO Bandgap Engineering

Session Chairs: **Adrián Hierro**, Univ. Politécnica de Madrid (Spain);  
**Charles Surya**, Nazarbayev Univ. (Kazakhstan)

10:30 am: **Monolithic ZnO optical microcavities: from materials science to room-temperature polariton lasers** (*Invited Paper*), Jesús Zúñiga-Pérez, Ctr. National de la Recherche Scientifique (France); Omar Jamadi, Institut Pascal (France) and Univ. Clermont-Auvergne (France); Christiane Deparis, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); François Reveret, Institut Pascal (France); Xavier Lafosse, Sophie Bouchoule, Lab. de Photonique et de Nanostructures (France); Pierre Disseix, François Lédard, Martine Mihailovic, Dmitry Solnyshkov, Guillaume Malpuech, Joël Leymarie, Institut Pascal (France); Mathieu Leroux, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) ..... [10533-47]

10:55 am: **Phonon-intersubband transition coupling in MgZnO/ZnO quantum wells** (*Invited Paper*), Adrián Hierro, Miguel Montes Bajo, Julien Tamayo-Arriola, Univ. Politécnica de Madrid (Spain); Maxime Hugues, Univ. Côte d'Azur (France) and Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) and Ctr. National de la Recherche Scientifique (France); Jose María Ulloa, Univ. Politécnica de Madrid (Spain); Nolwenn Le Biavan, Univ. Côte d'Azur (France) and Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) and Ctr. National de la Recherche Scientifique (France); Romain Peretti, Institute for Quantum Electronics, ETH Zurich (Switzerland); François Julien, Univ. Paris-Sud 11 (France); Jérôme Faist, Institute for Quantum Electronics, ETH Zurich (Switzerland); Jean-Michel Chauveau, Univ. Côte d'Azur (France) and Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) and Ctr. National de la Recherche Scientifique (France) ..... [10533-48]

11:20 am: **Breakage of the polarization selection rules for intersubband transitions in ZnO/MgZnO quantum wells** (*Invited Paper*), Miguel Montes Bajo, Instituto de Sistemas Optoelectrónicos y Microtecnología, Univ. Politécnica de Madrid (Spain); Nolwenn Le Biavan, Univ. Côte d'Azur (France) and Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) and Ctr. National de la Recherche Scientifique (France); Julien Tamayo-Arriola, Instituto de Sistemas Optoelectrónicos y Microtecnología, Univ. Politécnica de Madrid (Spain); A. Torres-Pardo, J. M. González-Calbet, Univ. Complutense de Madrid (Spain) and Ctr. Nacional de Microelectrónica (Spain); Jose María Ulloa, Instituto de Sistemas Optoelectrónicos y Microtecnología, Univ. Politécnica de Madrid (Spain); D. Lefebvre, M. Hugues, Jean-Michel Chauveau, Univ. Côte d'Azur (France) and Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France) and Ctr. National de la Recherche Scientifique (France); Adrián Hierro, Instituto de Sistemas Optoelectrónicos y Microtecnología, Univ. Politécnica de Madrid (Spain) ..... [10533-49]

11:45 am: **Electrically-driven ultraviolet ZnO semiconductor lasers** (*Invited Paper*), Jianlin Liu, Univ. of California, Riverside (USA) ..... [10533-50]

12:10 pm: **Homoepitaxy of non-polar ZnO/(Zn,Mg)O multi-quantum wells: from a precise growth control to the observation of intersubband transitions** (*Invited Paper*), Jean-Michel Chauveau, Nolwenn Le Biavan, Maxime Hugues, CRHEA-CNRS (France); Miguel Montes Bajo, Julien Tamayo-Arriola, ISOM, Universidad Politécnica de Madrid (Spain); Arnaud Jollivet, C2N, University Paris-Sud, (France); Borislav Hinkov, TU Wien (Austria); Bo Meng, ETH (Switzerland); Denis Lefebvre, Yvon Cordier, CRHEA-CNRS (France); Francois H Julien, C2N (France); Adrian Hierro, ISOM Universidad Politécnica de Madrid (Spain); Gottfried Strasser, TU Wien (Austria); Jerome Faist, ETH (Switzerland) ..... [10533-51]

12:35 pm: **Optical transitions due to native defects and impurities in ZnO** (*Invited Paper*), John L. Lyons, U.S. Naval Research Lab. (USA) ..... [10533-100]

Lunch/Exhibition Break ..... Wed 1:00 pm to 2:00 pm

## SESSION 12

LOCATION: ROOM 313 (SOUTH LEVEL 3) ..... WED 2:00 PM TO 3:20 PM

### Multifunctional Oxides for Energy Harvesting

Session Chairs: **Amador Pérez-Tomás**, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain);  
**Ifor D. W. Samuel**, Univ. of St. Andrews (United Kingdom)

2:00 pm: **Ultra-transparent conducting oxides for enhanced photo-ferroelectric harvesting and functionality** (*Invited Paper*), Amador Pérez-Tomás, Institut Català de Nanociència i Nanotecnologia (ICN2) (Spain) ..... [10533-52]

2:25 pm: **ZnO-based materials for energy harvesting: thermoelectric and photovoltaic** (*Invited Paper*), Yining Feng, Purdue Univ. (USA); Chuanle Zhou, Ian T. Ferguson, Missouri Univ. of Science and Technology (USA); Na Lu, Purdue Univ. (USA) ..... [10533-53]

2:50 pm: **Ga-doped ZnO nanoneedles for anti-reflection function on a Si solar cell**, Chun-Han Lin, Yu-Feng Yao, Jia-Yu Liao, Shaobo Yang, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) ..... [10533-54]

3:05 pm: **Effects of interfacial SiO<sub>2</sub> on the performance of ZnO/p-Si heterojunction solar cell**, Syed Sadique Anwer Askari, Manoj Kumar, Mukul K. Das, Indian Institute of Technology (Indian School of Mines), Dhanbad (India) ..... [10533-55]

Coffee Break ..... Wed 3:20 pm to 3:40 pm

## SESSION 13

LOCATION: ROOM 313 (SOUTH LEVEL 3) ..... WED 3:40 PM TO 6:10 PM

### Perovskite-based Materials and Devices II

Session Chair: **Ifor D. W. Samuel**,  
Univ. of St. Andrews (United Kingdom)

3:40 pm: **For the lead-halides luminescence efficiency is everything** (*Invited Paper*), Eli Yablonovitch, Univ. of California, Berkeley (USA) ..... [10533-56]

4:05 pm: **Photo-induced defect formation in CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> at low temperatures** (*Invited Paper*), Felix Lang, Victor V. Brus, Oleksandra Shargaieva, Jörg Rappich, Norbert H. Nickel, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) ..... [10533-57]

4:30 pm: **Metal oxides as effective interface materials in solution-processible solar cells** (*Invited Paper*), Gang Li, The Hong Kong Polytechnic Univ. (Hong Kong, China) ..... [10533-58]

4:55 pm: **Photo-induced dissociation of CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> and HC(NH<sub>2</sub>)<sub>2</sub>PbI<sub>3</sub>** (*Invited Paper*), Felix Lang, Viktor Brus, Oleksandra Shargaieva, Jörg Rappich, Norbert H. Nickel, Helmholtz-Zentrum Berlin (Germany) ..... [10533-59]

5:20 pm: **Novel growth techniques for the deposition of high-quality perovskite thin films** (*Invited Paper*), Charles Surya, Nazarbayev Univ. (Kazakhstan); Annie Ng, Zhiwei Ren, Gang Li, The Hong Kong Polytechnic Univ. (Hong Kong, China); Aleksandra B. Djurišić, The Univ. of Hong Kong (Hong Kong, China) ..... [10533-60]

5:45 pm: **Critical role of interface and perovskite lattice in high-efficiency and photostable solar cells** (*Invited Paper*), Olivier Durand, Institut National des Sciences Appliquées de Rennes (France); Wanyi Nie, Los Alamos National Lab. (USA); Hsinhan Tsai, Los Alamos National Lab. (USA) and Rice Univ. (USA); Reza Asadpour, Purdue Univ. (USA); Jean-Christophe Blancon, Fangze Liu, Los Alamos National Lab. (USA); Constantinos C. Stoumpos, Northwestern Univ. (USA); Joseph Strzalka, Argonne National Lab. (USA); Jared J. Crochet, Los Alamos National Lab. (USA); Pulickel M. Ajayan, Rice Univ. (USA); Boubacar Traore, Mikael Kepenekian, Claudine Katan, Institut des Sciences Chimiques de Rennes, Univ. de Rennes 1 (France); Sergei Tretiak, Los Alamos National Lab. (USA); Mercouri G. Kanatzidis, Northwestern Univ. (USA); Muhammad Ashraf Alam, Purdue Univ. (USA); Jacky Even, Institut National des Sciences Appliquées de Rennes (France); Aditya D. Mohite, Los Alamos National Lab. (USA) ..... [10533-61]

## WEDNESDAY POSTER SESSION

LOCATION: MOSCONE WEST LEVEL 2 & 3 ..... WED 6:00 PM TO 8:00 PM

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions.

Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Tuning the third-order nonlinear optical properties of fluorine: ZnO thin films for photonic device applications**, Albin Antony, P. Poornesh, Manipal Institute of Technology (India); Iwan V. Kityk, Czestochowa Univ. of Technology (Poland) ..... [10533-75]

**Thermal conductivity of β-Ga<sub>2</sub>O<sub>3</sub> bulk and thin films using the 3ω technique**, Nicholas Blumenschein, Michael Slomski, North Carolina State Univ. (USA); Plamen Paskov, Linköping Univ. (Sweden); John Muth, Tania Paskova, North Carolina State Univ. (USA) ..... [10533-77]

**Reliability and mechanism of ZnO/Cu/ZnO transparent electrode on flexible substrate**, Wei Hao Chen, National Central Univ. (Taiwan) ..... [10533-78]

**ZnO exciton recombination radiation in a weak magnetic field**, Andrey P. Tarasov, Moscow Institute of Physics and Technology (Russian Federation); Valery Markushev, Charus Briskina, Kotelnikov Institute of Radio Engineering and Electronics of Russian Academy of Sciences (Russian Federation); Mikhail Shiryayev, M.V. Lomonosov Moscow State Univ. (Russian Federation) ..... [10533-79]

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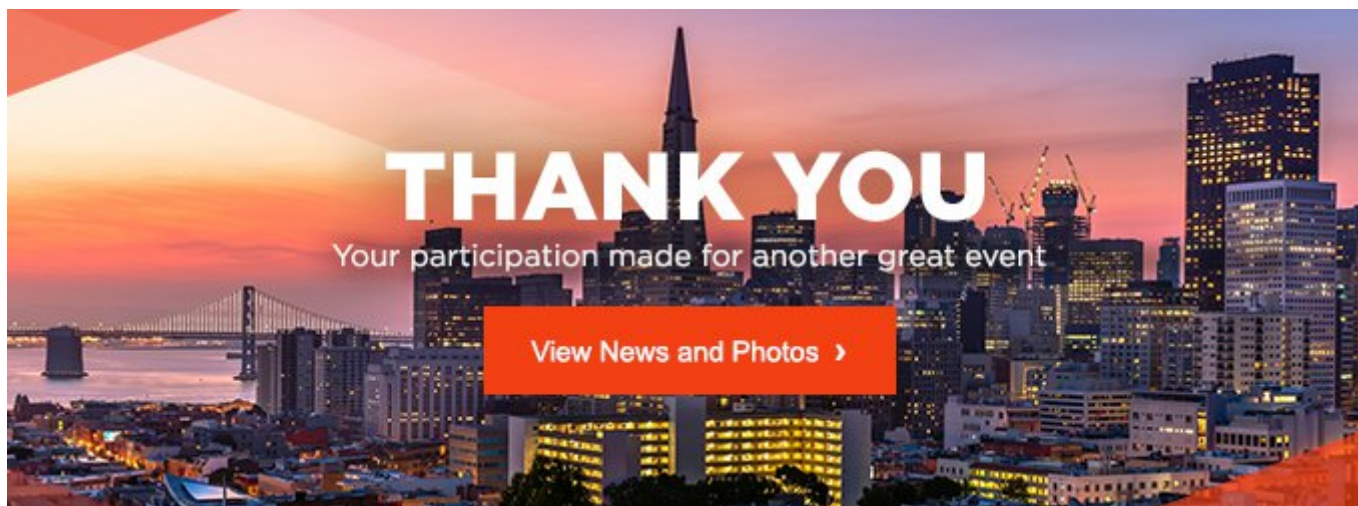
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