SYMPOSIUM O

Microphotonics III—Materials and Applications

December 1 – 5, 2002

Chairs

Yurii A. Vlasov	IBM T. J. Watson Research Center
Shanhui Fan	Stanford Univ
Benjamin Eggleton	OFS Fitel Laboratories
Thomas F. Krauss	Univ of St Andrews

Symposium Support
DARPA

* Invited paper

TUTORIAL

FT O: NANOPHOTONICS—THEORY AND EXPERIMENTS
Sunday, December 1, 2002
10:00 a.m. - 12:00 noon
Room 203 (Hynes)

The tutorial will cover both the theory and experimental aspects of nanophotonics and photonic crystal research. Following a general overview of the theoretical foundations and the exciting technological promises of nanophotonic materials, the tutorial will then focus on theoretical and experimental studies on the properties of a number of experimental structures that have captured a lot of recent attention, including in-plane photonic crystal integrated circuits, photonic bandgap fiber structures, and self-assembly approach to photonic crystal. The purpose is to introduce the audience to the basic physics and the fascinating potentials of these nano-photonic structures, and at the same time expose them to the challenges and open questions in this fast-moving field.

Instructors:
John D. Joannopoulos, Massachusetts Institute of Technology
David Norris, University of Minnesota

SESSION O1: SOFT CONDENSED MATTER APPROACHES TO PHOTONIC CRYSTALS
Chair: Alfons van Blaaderen
Monday Morning, December 2, 2002
Room 203 (Hynes)

8:30 AM O1.1
STRUCTURE AND GROWTH KINETICS OF BINARY COLLOIDAL CRYSTALS. R.J. Christianson, U. Gasser, A.E. Bailey, S. Manley, V. Prasad, P.N. Segre, D.A. Weitz, Harvard University, Dept. of Physics, Cambridge, MA; P.N. Pusey, A.B. Schofield, University of Edinburgh, Dept. of Physics and Astronomy, Edinburgh, UNITED KINGDOM; M.P. Doherty, S. Sankaran, A.L. Jankovsky, B. Shiley, J. Bowen, K. Dendorfer, J. Eggers, J. Koudelka, C. Kurta, T. Lorik, NASA Glenn Research Center, Brookpark, OH.

8:45 AM O1.2
ELECTRICALLY GUIDED SELF-ASSEMBLY OF BINARY COLLOIDAL CRYSTALS. W.D. Ristenpart, I.A. Aksay, and D.A. Saville, Princeton University, Dept. of Chemical Engineering, Princeton, NJ.

9:00 AM O1.3
DIRECT OBSERVATION OF COLLOIDAL CRYSTAL STRUCTURE WITH CHANGING IONIC STRENGTH. Michael A. Bevan, Jennifer A. Lewis, Paul V. Braun, and Pierre Wiltzius, Beckman Institute for Advanced Science and Technology, Department of Material Science and Engineering, University of Illinois, Urbana, IL.

9:15 AM O1.4
CHALCOGENIDE INVERTED OPALS WITH IR BANDGAPS. Preston B. Landon, Bog G. Kim, Ray Baughman, Anvar Zakhidov, and Robert Glosser, NanoTech Institute, The University of Texas at Dallas, Richardson, TX.

9:30 AM O1.5
MULTI-PHOTON POLYMERIZATION AND REFRACTIVE INDEX ENHANCEMENT OF WAVEGUIDE STRUCTURES WITHIN 3-D COLLOIDAL CRYSTALS. Paul V. Braun, Wonmok Lee, Stephanie A. Pruzinsky, UIUC, Dept of Mat Science and Eng, Urbana, IL.

9:45 AM BREAK

10:15 AM *O1.6
METALLO-DIELECTRIC PHOTONIC CRYSTALS. Alfons van Blaaderen, Alexander Moroz, Christina Graf, Krassimir P. Velikov, Soft Condensed Matter, Debye Institute, Utrecht University, Utrecht / F.O.M. Institute for Atomic and Molecular Physics, Amsterdam, NETHERLANDS.

10:45 AM O1.7
SWITCHABLE POLYMERIC MATERIALS THROUGH COLLOIDAL TEMPLATING. Yun-Ju Lee, Katharine A. Pfenning, Stephanie A. Pruzinsky, Paul V. Braun, UIUC, Dept of Materials Science and Engineering, Urbana, IL.

11:00 AM O1.8
BRAGG SWITCHING IN LIQUID CRYSTAL EMULSIONS. Alberto Fernandez-Nieves, Darren R. Link, David A. Weitz, Department of Physics and DEAS, Harvard University, Cambridge, MA.

11:15 AM O1.9
TEMPLATE-INDUCED CONTROLLED DRYING OF 2D AND 3D COLLOIDAL CRYSTALS. Jacob P. Hoogenboom[a,b], Erik de Bres[a,b], Anja K. van Langen-Suurling[c], Hans Romijn[c], and Alfons van Blaaderen[a,b]; [a]FOM-Institute for Atomic and Molecular Physics, Amsterdam, THE NETHERLANDS; [b]Soft Condensed Matter, Debye Institute, Utrecht Univ, THE NETHERLANDS; [c]Delft Institute of Microelectronics and Submicron Technology, Technical Univ of Delft, THE NETHERLANDS.

11:30 AM O1.10
PHOTONIC CRYSTAL SHEETS DERIVED BY SELF-ASSEMBLY ON LITHOGRAPHICALLY PATTERNED SURFACES. Bog G. Kim, Jaein Lee, Kunjal S. Parikh, Geoffrey Ussery, Preston Landon, Anvar Zakhidov, Ray Baughman, University of Texas at Dallas, NanoTech Institute, Richardson, TX; Sangwon Park, Kabseog Kim, J.B. Lee, University of Texas at Dallas, Department of Electrical Engineering, Richardson, TX; Bruce Dunn, UCLA, Department of Materials Science and Engineering, Los Angeles, CA; Eli Yablonivitch, UCLA, Department of Electrical Engineering, Los Angeles, CA.

11:45 AM O1.11
PROPERTIES OF INVERSE OPAL PHOTONIC CRYSTALS GROWN BY ATOMIC LAYER DEPOSITION. J.S. King, C.W. Neff, C.J. Summers, Georgia Institute of Technology, School of Materials Science and Engineering, Atlanta, GA; W. Park, University of Colorado, Department of Electrical and Computer Engineering, Boulder, CO; D. Morton, E. Forsythe, S. Blomquist, Army Research Laboratory, Adelphi, MD.

SESSION O2: MICROSTRUCTURAL AND PHOTONIC CRYSTAL FIBERS
Chair: Benjamin Eggleton
Monday Afternoon, December 2, 2002
Room 203 (Hynes)

1:30 PM *O2.1
MICROSTRUCTURE FIBER DEVICES. Robert Windeler, OFS Laboratories, Murray Hill, NJ.

2:00 PM *O2.2
PHOTONIC CRYSTAL FIBRES – PROPERTIES AND APPLICATIONS. W.J. Wadsworth, J.C. Knight, P.St.J. Russell, Department of Physics, University of Bath, UNITED KINGDOM.

2:30 PM BREAK

3:00 PM *O2.3
MICROSTRUCTURED POLYMER OPTICAL FIBRES: AN OVERVIEW OF PROGRESS. Maryanne Large, Martijn A. van Eijkelenborg, Joseph Zagari, Geoff Barton, Steven Manos, Geoffrey Henry, Nader Issa, Ian Bassett, Alexander Argyros and Leon Poladian, Optical Fibre Technology Centre, University of Sydney, AUSTRALIA.

3:30 PM *O2.4
CYLINDRICAL PHOTONIC BANDGAP FIBERS FOR REFLECTION AND TRANSMISSION APPLICATIONS. Yoel Fink, Shandon Hart, Burak Temelkuran, Gilles Benoit, Chris Sarantos, Ofer

Shapira, Mehmet Bayindir, Massachusetts Institute of Technology, Dept. of Materials Science and Engineering, Cambridge, MA.

4:00 PM O2.5
TRANSMISSION AND REFLECTION PROPERTIES OF MULTILAYER PHOTONIC BAND GAP FIBERS.
Burak Temelkuran, Shandon D. Hart, Gilles Benoit, Yoel Fink, Massachusetts Institute of Technology, Dept. of Materials Science and Engineering, Cambridge, MA.

4:15 PM O2.6
FABRICATION AND PROPERTIES OF SILICON BASED MINIATURE BRAGG FIBERS. J.G. Fleming, Shawn-Yu Lin, Ronald Hadley, Sandia National Laboratories, Albuquerque, NM.

4:30 PM O2.7
MULTILAYER PHOTONIC BAND GAP FIBERS: MATERIALS AND FABRICATION. Shandon D. Hart, Burak Temelkuran, Gilles Benoit, Yoel Fink, Massachusetts Institute of Technology, Dept. of Materials Science and Engineering, Cambridge, MA.

SESSION O3: MODIFIED EMISSION AND LASING IN MICROPHOTONIC STRUCTURES
Chair: Thomas F. Krauss
Tuesday Morning, December 3, 2002
Room 203 (Hynes)

8:30 AM *O3.1
EXTRAORDINARY LIGHT EMISSION AT THE PHOTONIC BAND EDGE AND ITS CONSEQUENCES ON ENERGY EFFICIENCY. Shawn-Yu Lin, Sandia National Laboratories, Albuquerque, NM.

9:00 AM O3.2
ACTIVE Si-BASED PHOTONIC CRYSTAL DEVICES USING ERBIUM-DOPED Si/SiO_2 SUPERLATTICES. Joo-Yeon Sung, Yong-Seok Choi, Se-Heon Kim, Jung H. Shin, Yong-Hee Lee, Korea Advanced Institute of Science and Technology (KAIST), Taejon, KOREA.

9:15 AM O3.3
STUDY OF THE LOCAL OPTICAL FIELD IN THE MICROCAVITIES STRUCTURES BY NEAR FIELD MICROSCOPY. A.I. Maidykovski, O.V. Lebedev, D.V. Kazantsev, A.A. Fedyanin, O.A. Aktsipetrov, Department of Physics, Moscow State University, Moscow, RUSSIA.

9:30 AM BREAK

10:00 AM *O3.4
2-D SLAB PHOTONIC CRYSTAL InGaAsP LASERS. Y.H. Lee, H.Y. Ryu, H.K. Park, S.H. Kim and S.H. Kwon, Korea Advanced Institute of Science and Technology, Department of Physics, Taejon, KOREA.

10:30 AM *O3.5
LOW-THRESHOLD TRIANGULAR LATTICE PHOTONIC CRYSTAL LASER BASED ON HIGH-Q CAVITY DESIGNS. Marko Lončar, Tomoyuki Yoshie, Axel Scherer, California Institute of Technology, Department of Electrical Engineering, Pasadena, CA; Pawan Gogna, Yueming Qiu, Jet Propulsion Laboratory, California Institute of Technology, In Situ Technology and Experiments Systems Section, Pasadena, CA.

11:00 AM O3.6
PHOTONIC-CRYSTAL DISTRIBUTED-FEEDBACK LASERS. I. Vurgaftman, W.W. Bewley, C.L. Canedy, J.R. Lindle, C.S. Kim, and J.R. Meyer, Naval Research Laboratory, Washington, DC; S.J. Spector, D.M. Lennon, G.W. Turner, and M.J. Manfra, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA.

11:15 AM O3.7
WIDELY TUNABLE LASER DESIGNS WITH PHOTONIC CRYSTAL MIRRORS. Sven Mahnkopf, Martin Kamp, Alfred Forchel, Dept of Physics, Julius-Maximilians-Univ, Würzburg, GERMANY; Reinhard März, Infineon Technologies AG, CPR PH, Munich, GERMANY.

11:30 AM O3.8
NEODYMIUM RANDOM LASERS. M.A. Noginov, N. Noginova, M. Bahoura, K.J. Morris, Center for Materials Research, Norfolk State University, Norfolk, VA; V. Drachev, Purdue University, West Lafayette, IN.

11:45 AM O3.9
MICROWAVE EMISSION CONTROL FROM ELECTRO-MAGNETIC CRYSTALS BY LATTICE MODIFICATIONS.
Soshu Kirihara, Yoshinari Miyamoto, Joining and Welding Research Institute, Osaka University, Osaka, JAPAN; Mitsuo Wada Takeda, Department of Physics, Faculty of Science, Shinshu University, Nagano, JAPAN; Kazuaki Sakoda, Research Institute for Electronic Science, Hokkaido University, Hokkaido, JAPAN.

SESSION O4: PLANAR MICROPHOTONIC STRUCTURES AND DEVICES - I
Chair: Richard M. Osgood
Tuesday Afternoon, December 3, 2002
Room 203 (Hynes)

1:30 PM *O4.1
ENGINEERING MODULAR PHOTONIC CRYSTAL DEVICES: USING THE LTR METHOD. Rab Wilson, Michael Mazilu, Thomas F. Krauss, School of Physics and Astronomy, University of St. Andrews, St. Andrews, Fife, SCOTLAND.

2:00 PM *O4.2
PHOTONIC CRYSTAL WAVEGUIDES. Thomas F. Krauss, Tim Karle, The Ultrafast Photonics Collaboration, School of Physics and Astronomy, University of St. Andrews, St. Andrews, UNITED KINGDOM.

2:30 PM BREAK

3:00 PM O4.3
SECOND HARMONIC OPTICAL STUDIES OF GaAs/AlGaAs TWO-DIMENSIONAL PHOTONIC CRYSTAL WAVEGUIDES. M. Agio, L.C. Andreani, M. Galli, G. Guizzetti, A.M. Malvezzi, M. Patrini, G. Vecchi, INFM and Universita di Pavia, Pavia, ITALY; E. Di Fabrizio, A. Passaseo, National Nanotechnology Laboratory, INFM, ITALY.

3:15 PM O4.4
ELECTRO-OPTIC TUNABLE MICROPHOTONIC DEVICES IN FERROELECTRICS. David A. Scrymgeour, Venkatraman Gopalan, Pennsylvania State Univ, Materials Research Lab, University Park, PA; Kevin T. Gahagan, Corning, Inc, Corning, NY.

3:30 PM O4.5
FLAT TOP PLANAR MAGNETIC PHOTONIC CRYSTALS: MODELLING AND FABRICATION. M. Levy, H. Yang, R. Li, P.D. Moran, Michigan Technological University, Dept. of Physics, Houghton, MI; C. Gutierrez and A. Bandyopadhyay, Southwest Texas State University, Dept of Physics, San Marcos, TX.

3:45 PM O4.6
PREPARATION AND CHARACTERIZATION OF SUBMICRON AND MICRON SCALE OPTICAL MATERIALS FOR MICROPHOTONIC APPLICATIONS. Baoping Wang, L.L. Isaacs, CCNY and CUNY Graduate Center, Dept of Chemical Engineering; A.B. Bykov, V. Petricevic, R.R. Alfano, CCNY and CUNY Graduate Center, Dept of Physics, New York, NY.

4:00 PM O4.7
THEORETICAL MODEL FOR MAGNETO-OPTICAL BRAGG GRATINGS. Fredrik Jonsson, Proximion Fiber Optics AB, Stockholm, SWEDEN; and Christos Flytzanis, Laboratoire de Physique de la Matiere Condensee, Ecole Normale Superieure, Paris, FRANCE, also with Department of Physics, Chalmers University of Technology, Göteborg, SWEDEN.

4:15 PM O4.8
TUNABLE TWO-DIMENSIONAL PHOTONIC CRYSTAL DEVICES. David M. Pustai and Dennis W. Prather, University of Delaware, Department of Electrical and Computer Engineering, Newark, DE.

4:30 PM O4.9
2D PHOTONIC CRYSTAL INFILTRATED BY LIQUID CRYSTAL: RESPONSE TO APPLIED ELECTRIC FIELD. J.H. Arroyo-Nunez and P. Halevi, Instituto Nacional de Astrofisica, Optica y Electronica, Puebla, MEXICO and Weizmann Institute of Science, Rehovot, ISRAEL; and J.A. Reyes-Cervantes, Universidad Nacional Autonoma de Mexico, D.F., MEXICO and Politecnico di Torino, ITALY.

4:45 PM O4.10
INTRINSIC LOCALIZED MODES IN NONLINEAR PHOTONIC CRYSTAL CIRCUITS. Arthur McGurn, Dept of Physics, Western Michigan University, Kalamazoo, MI.

SESSION O5: POSTER SESSION
Chair: Yurii A. Vlasov
Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

O5.1
STOP-BAND MEDIATED DIFFRACTION. Yu. A. Vlasov, IBM T.J. Watson Research Center, Yorktown Heights, NY; S. Fan, Electrical Engineering Department, Stanford University, CA; D.J. Norris, Chemical Engineering Department, University of Minnesota, MN.

O5.2
ASSEMBLY OF COLLOIDAL CRYSTALS: EFFECT OF COMPOSITIONAL MODULATION AND SUBSTRATE PATTERNING. Carlos J. Martinez, Michael Bevan, Paul V. Braun, Angel Chan, Wonmok Lee, Jennifer A. Lewis, Pierre Wiltzius, University of Illinois, Urbana, IL.

O5.3
CONTROLLING SELF-ASSEMBLY OF 3D PHOTONIC CRYSTALS. R.M. De La Rue[b], N.P. Johnson[b], D.W. McComb[a], M.A. McLachlan[a]; [a]Department of Chemistry, University of Glasgow, Glasgow, UNITED KINGDOM; [b]Department of Electronics and Electrical Engineering, University of Glasgow, Glasgow, UNITED KINGDOM.

O5.4
OPAL-GaP(N) BASED PHOTONIC CRYSTALS: FABRICATION AND OPTICAL PROPERTIES. A.B. Pevtsov, V.G. Golubev, D.A. Kurdyukov, A.V. Medvedev, A.V. Sel'kin, V.V. Travnikov, Ioffe Physico-Technical Institute RAS, St. Petersburg, RUSSIA; J. Merz, A. Mintairov, University of Notre Dame, Notre Dame, IN.

O5.5
SYNTHESIS OF MULTIFUNCTIONAL PHOTONIC CRYSTALS. P. Harkins, D. Eustace, J. Gallagher and D.W. McComb, Dept of Chemistry, Univ of Glasgow, Glasgow, UNITED KINGDOM.

O5.6
SYNTHESIS OF HIGH-QUALITY OPALS WITH A PERFECTLY CONTROLLABLE THICKNESS. Stèphane Reculusa, Serge Ravaine, Centre de Recherche Paul Pascal, C.N.R.S., Pessac, FRANCE.

O5.7
LATERALLY COMPRESSIVE DRYING OF COLLOIDAL MICROSPHERES INTO HIGHLY-ORDERD 2-DIMENSIONAL CRYSTALLINE ARRAYS. Shifeng Hou, Eric Geiss, Baocheng Yang, Harris Marcus, Fotios Papadimitrakopoulos, Nanomaterials Optoelectronic Laboratory, Department of Chemistry, Polymer Program, Institute of Materials Science, University of Connecticut, Storrs, CT.

O5.8
POLARIZED EMISSION OF POLYSTYRENE GRAFTED POLY(P-PHENYLENE ETHYNYLENE) IN A GLOBALLY ORIENTATED BLOCK COPOLYMER MATRIX. Craig A. Breen, Timothy M. Swager, Department of Chemistry; Thomas Breiner, Tao Deng, Edwin L. Thomas, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

O5.9
MODIFICATION OF PHOTONIC BANDGAP OF DIAMOND STRUCTURE BY CHANGING THE VOLUME FRACTION OF DIELECTRIC LATTICES. Shingo Kanehira, Sosyu Kirihara, Yoshinari Miyamoto, Joining and Welding Research Institute, Osaka University, JAPAN; Kazuaki Sakoda, Research Institute for Electronic Science, Hokkaido University, JAPAN; Mitsuo Wada Takeda, Department of Physics, Faculty of Science, Shinshu University, JAPAN.

O5.10
CHARACTERIZATION OF COMPACT PHOTONIC CRYSTAL BASED TAPERS. Markus Kesselring, Martin Kamp, Alfred Forchel, Technische Physik, University of Würzburg, Würzburg, GERMANY.

O5.11
2D PHOTONIC CRYSTALS MADE FROM POROUS ALUMINA. Jinsub Choi, Joerg Schilling, Reinald Hillebrand, Kornelius Nielsch, Ralf B. Wehrspohn and Ulrich Gösele, Max-Planck-Institute of Microstructure Physics, Halle, GERMANY; Guido Sauer, Department of Chemistry, Erlangen, GERMANY.

O5.12
MICROWAVE MEASUREMENTS OF THE PHOTONIC BANDGAP IN A 2D PHOTONIC CRYSTAL SLAB. J.M. Hickmann, D. Solli. C. McCormick, R. Plambeck, R.Y. Chiao, Department of Physics, University of California, Berkeley, CA.

O5.13
NANOPARTICLE RANDOM LASERS: MORPHOLOGICAL CONTROL OF PHOTOPHYSICS. Rachel Jakubiak, Dean P. Brown, Timothy J. Bunning and Richard A. Vaia, Air Force Research Laboratory, Materials & Manufacturing Directorate, WPAFB, OH; Rabinda Das and Emmanuel P. Giannelis, Cornell University, Materials Science & Engineering, Ithaca, NY; Demetrios Anglos and Spiros H. Anastasiadis, Foundation for Research & Technology-Hellas (FORTH), Institute of Electronic Structure & Laser (IESL), Heraklion, Crete, GREECE.

O5.14
DESIGN AND DEVELOPMENT OF A NANOSCALE SILICON LASER. Supriya Jaiswal, University of Virginia, Charlottesville, VA, and Oak Ridge National Laboratory, Oak Ridge, TN; John Simpson, Steve Withrow, C.W. White, Chris Rouleau, Oak Ridge National Laboratory, Oak Ridge, TN; Pamela Norris, University of Virginia, Charlottesville, VA.

O5.15
FERRITE MATERIALS FOR MAGNETO-PHOTONIC DATA TRANSMISSION. K. Downey, M.L. Martin, Y. Suzuki, Cornell Univ, Dept of Materials Science and Engineering, Ithaca, NY.

O5.16
TUNABLE DIELECTRIC MIRROR FIBERS. Gilles Benoit, Shandon Hart, Burak Temelkuran, Yoel Fink, MIT, Dept of Materials Science and Engineering, Cambridge, MA.

O5.17
VARIOUS ERBIUM-DOPED OXIDE MATRIX DEPOSITED BY AEROSOL CVD PROCESS. Jean-Luc Deschanvres, Wilfrid Meffre, Laboratoire des matériaux et du génie physique CNRS-ENSPG, St. Martin D'Hères, FRANCE.

O5.18
Abstract Withdrawn

O5.19
STRAIN-INDUCED BANDGAP NARROWING OF Ge LAYER GROWN ON Si SUBSTRATE [2]. D. Cannon, Y. Ishikawa, K. Wada, J.F. Liu, H.-C. Luan, and L.C. Kimerling, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

SESSION O6: PLANAR MICROPHOTONIC STRUCTURES AND DEVICES - II
Chair: Claude Weisbuch
Wednesday Morning, December 4, 2002
Room 203 (Hynes)

8:30 AM *O6.1
COUPLING TO PHOTONIC-CRYSTAL WAVEGUIDES AND ADIABATIC TAPERS. Steven G. Johnson, Peter Bienstman, J.D. Joannopoulos, Massachusetts Institute of Technology, Dept of Physics, Cambridge, MA; Maksim Skorobogatiy, OmniGuide Communications, Inc., Cambridge, MA.

9:00 AM O6.2
COMPACT AND EFFICIENT FIBER-TO-WAVEGUIDE COUPLERS. Vilson R. Almeida, Michal Lipson, Cornell Univ, Dept of Electrical and Computer Engineering, Ithaca, NY.

9:15 AM O6.3
PHOTONIC CRYSTAL INTERFACES. M. Mazilu, T.F. Krauss, A. Miller, Ultrafast Photonics Collaboration, School of Physics and Astronomy, University of St. Andrews, St. Andrews, SCOTLAND.

9:30 AM O6.4
MATERIALS STUDY OF SILICON OXYNITRIDE FILMS FOR OPTOELECTRONIC APPLICATIONS. Jessica G. Sandland, Anat Eshed, Jurgen Michel, Lionel C. Kimerling, Massachusetts Institute of Technology, Dept of Materials Science & Engineering, Cambridge, MA.

9:45 AM O6.5
SYMMETRICAL PERTURBATION ANALYSIS FOR PREDICTING BAND-EVOLUTION IN COMPLEX TWO-DIMENSIONAL PHOTONIC CRYSTALS. N. Malkova, S. Kim, T. Dilazaro, V. Gopalan, Materials Research Institute, Pennsylvania State University, University Park, PA.

10:00 AM BREAK

10:30 AM *O6.6
ULTRA-COMPACT OPTICAL DEVICES ON SILICON-ON-INSULATOR. Richard L. Espinola, Ming-Chun Tsai, Richard M. Osgood Jr., Columbia Univ, Dept of Electrical Engineering, New York, NY; Rokan Ahmad, Omniguide Communications, Cambridge, MA.

11:00 AM *O6.7
FABRICATION AND CHARACTERISATION OF 2D PHOTONIC CRYSTAL ADD DROP MULTIPLEXERS ON SOI. A. Vörckel[a], M. Mönster[a], W. Henschel[b], P. Haring Bolivar[a], H. Kurz[a,b]; [a]Institut für Halbleitertechnik, RWTH Aachen, GERMANY; [b]AMO GmbH, Aachen, GERMANY.

11:30 AM O6.8
NEAR-INFRARED TWO-DIMENSIONAL PHOTONIC CRYSTAL DEVICES ON A SILICON-BASED PLATFORM. Lu Chen, Yuri Suzuki, Dept. of Materials Science and Engineering, Cornell University, Ithaca, NY; Glenn E. Kohnke, Photonic Technologies, Corning Inc., Corning, NY.

11:45 AM O6.9
BUTT-COUPLING INTO SOI PHOTONIC CRYSTAL SLAB WAVEGUIDES. Yu. A. Vlasov, S.J. McNab; IBM T.J. Watson Research Center, Yorktown Heights, NY; N. Moll, IBM Zurich Research Lab, Rueschlikon, SWITZERLAND.

SESSION O7: PLANAR MICROPHOTONIC STRUCTURES AND DEVICES - III
Chair: Yong H. Lee
Wednesday Afternoon, December 4, 2002
Room 203 (Hynes)

1:30 PM *O7.1
LOSS ENGINEERING IN 2D PHOTONIC CRYSTALS. Claude Weisbuch and Henri Benisty, Laboratoire de Physique de la Matiere Condensee, Ecole Polytechnique, Palaiseau, FRANCE.

2:00 PM O7.2
POLARIZATION MODE DISPERSION IN PHOTONIC CRYSTALS. Zheng Wang, Stanford Univ, Dept of Applied Physics, Stanford, CA; David A.B. Miller, Shanhui Fan, Stanford Univ, Dept of Electrical Engineering, Stanford, CA.

2:15 PM O7.3
SELF-COLLIMATING PHENOMENA IN PLANAR PHOTONIC CRYSTALS. Lijun Wu, Michael Mazilu,Thomas Krauss, The Ultrafast Photonics Collaboration, School of Physics and Astronomy, University of St. Andrews, St. Andrews, UNITED KINGDOM.

2:30 PM O7.4
ELECTRO-OPTIC AND STRAIN-TUNABLE SUPERPRISM EFFECTS IN PHOTONIC CRYSTALS. David A. Scrymgeour, Sungwon Kim, Natalia Mlkova, Venkatraman Gopalan, Pennsylvania State Univ, Materials Research Lab, University Park, PA.

2:45 PM O7.5
NOVEL APPLICATION OF MEMS TO MICROPHOTONICS. J.G. Fleming, Shawn-Yu Lin, Sandia National Laboratories, Albuquerque, NM.

3:00 PM BREAK

3:30 PM *O7.6
MICROPHOTONIC INTEGRATED CIRCUITS. Lionel C. Kimerling, Massachusetts Institute of Technology, Department of Materials Science and Engineering and MIT Microphotonics Center, Cambridge, MA.

4:00 PM O7.7
OPTICAL SPECTROSCOPY AND INTERFEROMETRIC STUDIES ON Si-BASED PHOTONIC CRYSTALS. M. Galli, F. Marabelli, M. Patrini, M. Agio, L.C. Andreani, G. Guizzetti, INFM and Phys. Dept. "A. Volta", University of Pavia, ITALY; P. Bettotti, L. Pavesi, INFM and Phys. Dept., University of Trento, ITALY; G. Pucker, ITC-IRST, Trento, ITALY.

4:15 PM O7.8
PROSPECTS FOR RAMAN AMPLIFICATION IN SILICON WAVEGUIDES. Dimitri Dimitropoulos, Ricardo Claps, and Bahram Jalali, Optoelectronic Circuits and Systems Laboratory, University of California, Los Angeles, CA.

4:30 PM O7.9
STRAIN-INDUCED BANDGAP NARROWING OF Ge LAYER GROWN ON Si SUBSTRATE [1]. Y. Ishikawa, K. Wada, D.D. Cannon, J.F. Liu, H.-C. Luan, and L.C. Kimerling, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

4:45 PM O7.10
FABRICATION OF OPTICAL WAVEGUIDES IN RELAXOR FERROELECTRIC LEAD ZINC NIOBATE-LEAD TITANATE BY ION-IMPLANTATION. M. Levy, P.D. Moran, Michigan Technological University, Dept. of Materials Sciences, Houghton, MI; H. Bakhru, SUNY at Albany, Dept. of Physics, Albany, NY.

SESSION O8: PLASMONS AND METAL NANOPHOTONICS
Thursday Morning, December 5, 2002
Room 203 (Hynes)

8:30 AM *O8.1
Abstract Withdrawn

9:00 AM *O8.2
PHOTONICS WITH PLASMONIC NANOMATERIALS. Vladimir M. Shalaev, Purdue University, School of Electrical and Computer Engineering, West Lafayette, IN.

9:30 AM BREAK

10:00 AM *O8.3
BEAMING LIGHT FROM A SUB-WAVELENGTH APERTURE. Thomas W. Ebbesen, ISIS, Louis Pasteur University, Strasbourg, FRANCE.

10:30 AM O8.4
THEORY ON THE BEAMING OF LIGHT FROM A SUBWAVELENGTH APERTURE. Luis Martín-Moreno, Departamento de Fisica de la Materia Condensada, Universidad de Zaragoza, SPAIN; Francisco José Garcia-Vidal, Departamento de Fisica Teorica de la Materia Condensada, Universidad Autonoma de Madrid, SPAIN.

10:45 AM O8.5
SUB-DIFFRACTION LIMIT FOCUSING IN THE NEAR FIELD USING PLANAR METAL FILMS. Pieter G. Kik, Stefan A. Maier, and Harry A. Atwater, California Institute of Technology, Thomas J. Watson Laboratory of Applied Physics, Pasadena, CA.

11:00 AM O8.6
ENERGY LOCALIZATION AND GUIDING PROPERTIES OF PLASMON WAVEGUIDES. Stefan A. Maier, Pieter G. Kik, Harry A. Atwater, California Institute of Technology, Thomas Watson Laboratory of Applied Physics, Pasadena, CA; Sheffer Meltzer, Ari A.G. Requicha, Bruce E. Koel, University of Southern California, Laboratory for Molecular Robotics, Los Angeles, CA.

11:15 AM O8.7
ADVANCES IN 2-D PHOTONIC CRYSTAL SURFACE STRUCTURES FOR SELECTIVE INFRARED EMISSION. Irina Puscasu, Martin U. Pralle, Mark P. McNeal, Nicholas Moelders, Anton C. Greenwald, James T. Daly, Edward A. Johnson, Ion Optics, Inc., Waltham, MA; Ihab El-Kady, Rana Biswas, Iowa State University, Ames Laboratory and Dept. of Physics, Ames, IA.

SESSION O9: VARIOUS METHODS FOR FABRICATION OF MICROPHOTONIC STRUCTURES
Chair: Cefe Lopez
Thursday Afternoon, December 5, 2002
Room 203 (Hynes)

1:30 PM *O9.1
PHOTONIC CRYSTALS BY HOLOGRAPHIC LITHOGRAPHY: DESIGN AND DEVICES. D.N. Sharp, E.R. Dedman, J. Scrimgeour, A.J. Turberfield, Univ of Oxford, Dept of Physics, Clarendon Laboratory, Oxford, UNITED KINGDOM; C.F. Blanford, K. Saravanamuttu, R.G. Denning, Univ of Oxford, Dept of Chemistry, Inorganic Chemistry Laboratory, Oxford, UNITED KINGDOM.

2:00 PM O9.2
SOL GEL DERIVED SILICA-ACRYLATE COMPOSITES FOR 3D HOLOGRAPHIC LITHOGRAPHY OF PHOTONIC CRYSTALS. Kalaichelvi Saravanamuttu, Christopher F. Blanford, Zehua Liu,

Robert G. Denning, Inorganic Chemistry Laboratory, University of Oxford, UNITED KINGDOM; David N. Sharp, Emma Dedman, Jan Scrimgeour, Andrew J. Turberfield, Clarendon Laboratory, Dept of Physics, University of Oxford, UNITED KINGDOM.

2:15 PM O9.3
CREATING PERIODIC 3D STRUCTURES BY MULTI-BEAM INTERFERENCE OF VISIBLE LASER. Shu Yang, Gang Chen, Ronen Rapaport, Joanna Aizenberg, Chaitanya Ullal, Kenichi Fukukawa, Elsa Reichmanis, Bell Laboratories, Lucent Technologies, Murray Hill, NJ.

2:30 PM O9.4
FABRICATION OF MODIFIED WOODPILE PHOTONIC CRYSTAL STRUCTURES. T. Fulop, K. Kash, U. Landau, J.C. Angus, Case Western Reserve University, Cleveland, OH.

2:45 PM O9.5
PHOTONIC BAND GAP RESONATORS FROM HOLOGRAPHIC PHOTOPOLYMERIZATION: A NEW APPROACH FOR NANOPHOTONICS. Rachel Jakubiak, Fatma Vatansever, Timothy J. Bunning and Richard A. Vaia, Air Force Research Laboratory, Materials & Manufacturing Directorate, WPAFB, OH; Lalgudi V. Natarajan and Vincent P. Tondiglia, Science Applications International Corp., Dayton OH; David W. Tomlin, Technical Management Concepts, Inc., Beavercreek, OH.

3:00 PM BREAK

3:30 PM *O9.6
BUILD UP OF A DIAMOND LATTICE OPAL BY NANOROBOTIC TECHNIQUES. Cefe Lopez, Florencio Garcia-Santamaria, Marta Ibisate, Francisco Meseguer, Instituto de Ciencia de Materiales de Madrid (CSIC) Madrid, SPAIN; Hideki T. Miyazaki, Norio Shinya, National Institute for Materials Science, Tsukuba, JAPAN; Alfonso Urquia, and Manuel Belmonte, Agere Systems Espana, Madrid, SPAIN.

4:00 PM O9.7
FABRICATION OF LAYER-BY-LAYER PHOTONIC BANDGAP CRYSTALS BY MICRO-TRANSFER MOLDED TEMPLATES. H.H. Kang, Iowa State University, Materials Science and Engineering; K P. Constant, Iowa State University, Materials Science and Engineering; D.P. Cann, Iowa State University, Materials Science and Engineering; W.Y. Leung, Ames Laboratory; and K.M. Ho, Iowa State University, Department of Physics and Astronomy and Ames Laboratory, Ames, IA.

4:15 PM O9.8
SELF-ASSEMBLED PATTERNING AND MEMS BASED FABRICATION OF 2D PHOTONIC CRYSTALS. E. Oesterschulze, G. Georgiev, Univ of Kassel, Kassel, GERMANY.

4:30 PM O9.9
OPTICAL PROPERTIES OF NANOSTRUCTURED THIN FILMS PREPARED BY GLANCING ANGLE DEPOSITION. Lei Lin, Peter D. Persans, Y. Chen, T.-M. Lu, G.-C. Wang, Y.-P. Zhao, Rensselaer Polytechnic Institute, Troy, NY.

4:45 PM O9.10
FABRICATION OF MICRO-OPTICAL COMPONENTS USING PROTON BEAM MICROMACHINING. Andrew A. Bettiol, Sow Chorng Haur, Sum Tze Chien, Jeroen A. van Kan and Frank Watt, Research Centre for Nuclear Microscopy (RCNM), Department of Physics, National University of Singapore, SINGAPORE.