SYMPOSIUM A

Defect-Mediated Phenomena in Ordered Polymers
December 2 – 4, 2002

Chairs
Christopher K. Harrison
Samuel P. Gido
Gregory C. Rutledge

NIST
Univ of Massachusetts-Amherst
MIT

A Joint Proceedings with Symposium A/B
to be published in both
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of the Materials Research Society
Symposium Proceedings Series

Invited paper

SESSION A1:
Chair: Samuel P. Gido
Monday Morning, December 2, 2002
Room 303 (Hynes)

8:30 AM *A1.1

9:00 AM A1.2
BLOCK COPOLYMERS IN SMALL CONFINEMENTS. Joy Y. Cheng, C.A. Ross, Edwin L. Thomas, Dept of Materials Science and Engineering, MIT, Cambridge, MA; Henry J. Smith, Dept of Electrical Engineering and Computer Science, MIT, Cambridge, MA; Mark A. Hempenius, G. Julio Varela, Dept of Materials Science and Technology of Polymers, Univ of Twente, NETHERLANDS.

9:15 AM A1.3
GRAIN STRUCTURE OF CROSS-LINKED BLOCK COPOLYMERS. Hyekahn Hahn, Nihal P. Bakara, University of California, Dept of Chemical Engineering, Berkeley, CA.

9:45 AM BREAK

10:15 AM *A1.4
NON-EQUILIBRIUM STRUCTURES IN LAMELLAR DIBLOCK COPOLYMERS UNDER SHEAR. Karen I. Winey, Univ of Pennsylvania, Dept of Materials Science, Philadelphia, PA.

10:45 AM *A1.5
FOLDING LAYERED LIQUIDS. David Morse, Univ of Minnesota, Minneapolis, MN.

11:15 AM *A1.6
CELL DYNAMICS SIMULATIONS OF SHEAR-INDUCED ALIGNMENT AND DEFECT ANNihilation IN STRIPE PATTERNS FORMED BY BLOCK COPOLYMERS. Ian Hamley, Shin-Run Ren, Dept of Chemistry, University of Leeds, Leeds, UNITED KINGDOM; Paolo Teseioli, P.D. Olmsted, Dept of Physics and Astronomy, University of Leeds, UNITED KINGDOM.

11:45 AM *A1.7
EFFECTS OF BLENDING SBS AND SMA ON MORPHOLOGY AND MECHANICAL PROPERTIES. Lam Pham, Chinghau Sung, Center for Advanced Materials, Dept of Chemical and Nuclear Engineering, University of Massachusetts Lowell, Lowell, MA; Julie Chen, Dept of Mechanical Engineering, University of Massachusetts Lowell, Lowell, MA; Joey Mend, Dept of Physics Engineering, University of Massachusetts Lowell, Lowell, MA.

SESSION A2:
Chair: Nihal P. Bakara and Karen I. Winey
Monday Afternoon, December 2, 2002
Room 303 (Hynes)

1:30 PM *A2.1
OBSERVATION OF COPOLMER MORPHOLOGIES IN THIN FILM VERTICAL AND LATERAL ORDERING. Thomas P. Russell and Mathew Meiner, University of Massachusetts-Amherst, Amherst, MA.

2:00 PM *A2.2
DEFECTS IN OPTOELECTRONICALLY ACTIVE ORGANIC MOLECULAR AND POLYMERIC CRYSTALS. David C. Martin, Patricia Wilson, Jun Luo, Lebahabesh Gonzalez-Ronda, Christian Kriebel, and Lawrence F. Drummy, Dept of Materials Science and Engineering and the Macromolecular Science and Engineering Center, The University of Michigan, Ann Arbor, MI.

2:30 PM A2.3
MICROMECHANICS OF DEFORMATION-INDUCED MOLECULAR ALIGNMENT IN PENTACENE THIN FILMS. Lawrence W. Drummy, Paul K. Misra, David C. Martin, Department of Materials Science and Engineering and the Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI.

2:45 PM A2.4
ELECTRONS, HOLES, AND ELECTRON-HOLE PAIRS IN POLYETHYLENE. S. Serru, E. Tohtsi, D. Ceresoli, S. Scandolo, C. Righi, G. Santoro, “International School for Advanced Studies (SISSA), Trieste, ITALY; 1^realto Nazionale per la Fisica della Materia (INFN), “Polisi Cari e Sistemi, Milano, ITALY; International Center for Theoretical Physics (ICTP), Trieste, ITALY.

3:00 PM BREAK

3:30 PM *A2.5
EVOLUTION OF PROPERTY AND MICROSTRUCTURE OF (VDE-TRIE) COPOLYMERS MODIFIED BY IRRADIATION. beautified DEFECTS. Z. Y. Cheng, Xing Kong, Wang Q.M. Zhong, The Pennsylvania State University, Materials Research Institute, University Park, PA; Fred B. Bateman, Radiation Interactions and Dosimetry, NIST, Gaithersburg, MD.

4:00 PM *A2.6
PHOTOEXCITATION DYNAMICS IN POLYFLUORENE Oligomers AND THE ROLE OF KETO DEFECTS: A THEORETICAL STUDY. Sergei Chirin, Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM.

4:30 PM *A2.7
EFFECT OF PULSED MAGNETIC FIELDS ON CRYSTALLIZATION OF POLYMERS. Mark N. Lezn, Voronezh State University, Voronezh, RUSSIA.

SESSION A3:
Chair: Christopher K. Harrison and David C. Morse
Tuesday Morning, December 3, 2002
Room 303 (Hynes)

8:30 AM *A3.1

9:00 AM *A3.2
DEFECT-MEDIATED MELTING AND LONG-RANGE ORDER IN THIN DI BLOCK COPOLYMERS. Daniel J. Ogbe, Kirill Katsaf, Michael Schick, University of Washington, Department of Physics, Seattle, WA.

9:30 AM *A3.3
THEORY OF T-JUNCTIONS AND SYMMETRIC TILT GRAIN BOUNDARIES IN PURE AND MIXED POLYMER SYSTEMS. Daniel Dogie, Kirill Katsaf, Michael Schick, University of Washington, Department of Physics, Seattle, WA.

10:00 AM BREAK

10:30 AM *A3.4
DEFECT EFFECTS ON FRACTURE IN BLOCK COPOLYMER GRAIN BOUNDARIES. Mark W. Morgen, Polymer Science Centre, University of Reading, Reading, UNITED KINGDOM.

11:00 AM *A3.5
THE GEOMETRY OF DEFECT PHASES. Randall Kamien.
Session A4

Chair: Rigoberto Advincula and Richard A. Register
Tuesday Afternoon, December 3, 2002
Room 303 (Hynes)

1:30 PM *A4.1
DEFECT DES IN 2D FILMS OF ASYMMETRIC BLOCK COPOLYMERS. R.A. Segalman, A. Hexemer, M.R. Hammond and E.J. Kramer, UCSB, Santa Barbara, CA.

2:00 PM *A4.2
INFLUENCE OF MOLECULAR ARCHITECTURE ON DEFORMATION BEHAVIOR AND TOUGHNESS OF BLOCK AND GRAFT COPOLYMERS. Roland Weisfled, Institute of Polymer Research, Dresden (IPF), Germany.

2:30 PM A4.3
MORPHOLOGY AND MECHANICAL PROPERTIES OF (AB)_x MULTIBLOCK COPOLYMERS. Kim Rasmussen, Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM.

2:45 PM A4.4
DEFECT NUCLEATION AND ANNihilation IN FLOW-ALIGNING POLYMERIC LIQUID CRYSTALS. Dana Greco, Alejandro D. Rey, McGill Univ, Dept of Chemical Engineering, Montreal, Quebec, Canada.

3:00 PM BREAK

3:30 PM *A4.5
ORIGIN OF CHIRALITY IN LAMIellar Films of ARHILAR POLYMER MOLECULES. Mangappan Mathukumar, Univ of Massachusetts, Amherst, MA.

4:00 PM A4.6
INTERFAcIAL-ENERGY DEPENDENCE OF MICRODOMAIN ORIENTATION IN SYMMETRIC DIBLOCK COPOLYMER THIN FILMS. Ting Xu, Yuqing Zhu, Samuel P. Gido, Thomas P. Russell, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA.

4:15 PM A4.7
NUCLEATION AND GROWTH OF CYLINDRICAL MORPHOLOGY AT TILT GRAIN BOUNDARIES IN LAMIELLAR BLOCK COPOLYMER / HOMOPOLYMER BLENDS. Engin Burgu and Samuel P. Gido, Polymer Science and Engineering Department, University of Massachusetts, Amherst, MA.

SESSION A4 POSTER SESSION

Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

A4.1
DEFECT MODIFICATION OF THE FERROELECTRIC PROPERTIES AND MESOSTRUCTURES IN TERPOLYMER OF POLY(VINYLIDENE FLUORIDE-TRIFLUOROETHYLENE-CHLOROFLUOROETHYLENE). Hengfeng Li, Ying Rang Wang, Z.Y. Cheng, and Q.M. Zhang, Materials Research Institute, The Pennsylvania State University, University Park, PA.

A4.5
NETWORK STRUCTURES OF THE POLYMERS DERIVED FROM METHACRYLATE TYPE CROSS-LINKING AGENTS. Ken Hosoya, Hiroshi Aoki, Manskou Takeuchi, Toshir Igemuri, Nobuo Tanaka, Kyoto Institute of Technology, Dept. of Polymer Science, Matsuyama, Sakyoda, Kyoto, Japan.

A5.3
SINGLE SHOT OF A1 LASER-INDUCED PHOTOCHEMICAL NUCLEATION OF COPPER ON POLYETHYLENE-TEREPHTHALATE SURFACE. Hiroto Tokunaga, Masatani Murahara, Tokai Univ, Department of Electrical Engineering, Hiratsuka, Kanagawa, Japan.

A5.4
MOLECULAR MODELING OF PLANAR DEFECTS IN PENTACENE. Paul Maia, Lawrence Drummond, David C. Martin, Department of Materials Science and Engineering and the Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI.

A5.5
INFLUENCE OF DISTORPTION OF THE LINEAR CHARACTER OF THE POLYETHYLENE CHAIN ON ITS STRUCTURE AND PHYSICOMECHANICAL PROPERTIES. Sozoya Aramazova, Alexaderden Aramazova, Institute of Physical Chemistry RAN, Moscow, Russia.

A5.6
POLYMER INDUCED SELF-ORGANIZING CARBON NANOTUBE FILMS. Rory Leacy, Andrew Minett, Skakia Benrezek, Dept of Physics, Trinity College Dublin, Dublin, Ireland; Gordon Chambers, POCAS, Dublin Institute of Technology, Dublin, Ireland; Alan Dalton, University of Texas at Dallas, Dallas, TX; Marc in het Panhuis, Functional Materials Group, Dept of Physics, Trinity College Dublin, Dublin, Ireland.

A5.7
MODELING OF DISLOCATION FORMATION AND PLASTIC DEFORMATION OF AN ORIENTED CRYSTALLINE POLYMER. Ulman Gafurov, Institute of Nuclear Physics, Tashkent, Uzbekistan.

A5.8
THE QUANTUM-CHEMICAL MODELING OF DEFECT FORMATION AND ELECTRONIC STRUCTURE OF A POLYMETHYLENE CHAIN. Ulman Gafurov, Vitaly Brukov, Institute of Nuclear Physics, Tashkent, Uzbekistan.

SESSION A5: 8:30 AM *A5.1

8:30 AM *A5.1
HIERARCHICAL SELF-ASSEMBLY OF NANOSTRUCTURES ON DIBLOCK COPOLYMER SCAFFOLDS. Heinrich M. Jaeger, University of Chicago, James Franck Institute and Department of Physics, Chicago, IL.

9:00 AM *A5.2
AN ULTRASMAL SMALL ANGLE X-RAY SCATTERING STUDY OF HIGH PRESSURE CRYSTALLIZED ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE. Mary Turell, Philippe Scherrer, Anuj Bedane, Department of Orthopedic Surgery, Brigham & Women's Hospital, Harvard Medical School, Boston, MA.

9:30 AM A5.3
THE EFFECT OF NUCLEATING AGENTS ON THE CRYSTALIZATION OF POLYPROPYLENE THIN FILMS. Mark L. Walker, Surface and Macromolecular Science Division; Archie P. Smith and Alangir Karim, Polymers Division, National Institute of Standards and Technology, Gaithersburg, MD.

9:45 AM A5.4
THE EFFECT OF PHASE SEPARATION ON CRYSTALLIZATION IN POLYOLEFIN BLENDS. Go Masuhu, Kousumi Sannma, Howard Wang, Zhi-Gang Wang, Charles C. Han, National Institute of Standards and Technology, Polymers Division, Gaithersburg, MD.

10:00 AM BREAK

SESSION A6: 10:30 AM *A6.1

10:30 AM *A6.1
NOVEL SURFACE MORPHOLOGY AND ORDERING IN LIQUID CRYSTAL DIBLOCK COPOLYMER ULTRATHIN FILMS. Jung-Sheng Wu, Paula T. Hammond, MIT, Dept of Chemical Engineering, Cambridge, MA.

11:00 AM A6.6
ABSTRACT WITHDRAWN
Molecular Organization of Branched Polymers. A.
Rastogi, J. Hebba, S. Rastogi, V.B.F. Machot, The Dutch Polymer
Institute, Dept Chemical Engineering, Eindhoven University of
Technology, Eindhoven, THE NETHERLANDS.