# SYMPOSIUM D

Electronics on Unconventional Substrates—Electrotextiles and Giant-Area Flexible Circuits

December 2 – 3, 2002

Chairs

Michael S. Shur — Rensselaer Polytechnic Inst
Patricia M. Wilson — Foster-Miller, Inc
Dick Urban — Charles Stark Draper Laboratory

Proceedings to be published in both
book form and online
(see *ONLINE PUBLICATIONS* at www.mrs.org)
as Volume 736
of the Materials Research Society
Symposium Proceedings Series

* Invited paper
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SESSION D1: ELECTROTEXTILES
Chairs: Carole Winterhalter and Patricia M. Wilson
Monday Morning, December 2, 2002
Room 201 (Hynes)

**8:30 AM *D1.1**
ELECTROTEXTILES. Elana Ethridge, Defense Advanced Research Projects Agency, Microsystems Technology Office.

**9:00 AM *D1.2**
SIGNAL PROPAGATION AND MULTIPLEXING CHALLENGES IN ELECTRONIC TEXTILES. J.F. Muth, E. Grant, ECE Dept, North Carolina State University, Raleigh, NC; A. Dhawan, A.M. Seyam, T. Ghosh, Department of Textile and Apparel, Technology and Management, North Carolina State University, Raleigh, NC.

**9:30 AM *D1.3**
FORMATION OF TEXTILE STRUCTURES FOR GIANT-AREA APPLICATIONS. Abdelfatta M. Seyam, North Carolina State Univ, Raleigh, NC.

**10:00 AM BREAK**

**10:15 AM *D1.4**
COLOR-CHANGE FABRIC AND TOUCH SENSING: THE USE OF FLEXIBLE TEXTILE CIRCUITRY FOR FASHION AND DESIGN APPLICATIONS. Margaret Orth, International Fashion Machines Inc., Cambridge, MA.

**10:45 AM D1.5**
MANUFACTURING AND PERFORMANCE ASSESSMENTS OF SEVERAL APPLICATIONS OF ELECTROTEXTILES AND LARGE-AREA FLEXIBLE CIRCUITS. David Cadogan, ILC Dover Inc., Frederica, DE.

**11:00 AM D1.6**
DIRECT WRITE FABRICATION OF ELECTRONICS AND SENSOR MATERIALS ONTO TEXTILES AND FLEXIBLE CIRCUITS. Sanjay Sampath, Center for Thermal Spray Research, Department of Materials Science and Engineering, State University of New York, Stony Brook, NY.

**11:15 AM D1.7**
TEXTILE NETWORKS FOR WEARABLE ELECTRONICS. Patricia Wilson, Justyna Teverovsky, Brian Farrell, Jeremiah Slade, Jeremy Bowman, Marty Agpaoa, Doug Thomson, Foster-Miller, Inc., Waltham, MA; Wendy Horowitz, Ed Tierney, Offray Specialty Narrow Fabrics, LLC, Chester, NJ; Carole Winterhalter, U.S. Army Soldier Biological and Chemical Command-Natick Soldier Center, Natick, MA.

**11:30 AM D1.8**
ELECTROLUMINESCENT TEXTILES USING SPUTTER-DEPOSITED AMORPHOUS NITRIDE-RARE-EARTH ION COATINGS. M.E. Kordesch, Ohio University, Department of Physics, Athens, OH; H.H. Richardson, Ohio University, Department of Chemistry, Athens, OH.

**11:45 AM D1.9**
DEVELOPMENT OF WOVEN FABRIC-BASED ELECTRICAL CIRCUITS. A. Dhawan, T.K. Ghosh, A. Seyam, Dept of Textile and Apparel Technology and Management, North Carolina State University, Raleigh, NC; J.F. Muth, ECE Dept, North Carolina State University, Raleigh, NC.

SESSION D2: FIBERS FOR ELECTRONIC AND PHOTONIC APPLICATIONS
Chairs: Elana Ethridge and Margaret Ann Orth
Monday Afternoon, December 2, 2002
Room 201 (Hynes)

**1:30 PM *D2.1**
MORPHOLOGICAL EFFECTS AND CONSEQUENCES OF DEVELOPED MICROSTRUCTURE ON THE OPTICAL AND ELECTRONIC PROPERTIES OF CONJUGATED POLYMERIC FIBERS AND FILMS FOR APPLICATION TO SMART FIBERS. Richard V. Gregory, Stephen S. Hardaker, Clemson University, School of Materials Science and Engineering and NSF Center for Advanced Fibers and Films, Clemson, SC.

**2:00 PM *D2.2**
METAL FIBER TECHNOLOGIES. Doug Watson, Bekaert Fibre Technologies, Marietta, GA.

**2:30 PM *D2.3**
ARACON® MCF AN ENABLING TECHNOLOGY FOR SMART TEXTILES. John D. Ross, DuPont Advanced Fibers Systems, Richmond. VA.

**3:00 PM BREAK**

**3:15 PM *D2.4**
THE MATERIALS AND PROCESSES FOR NOVEL ELECTRIC CONTACTS FROM PAN FIBER-BASED COMPOSITES. Joseph A. Swift, Stanley J. Wallace, Xerox Corporation, Wilson Center for Research and Technology, Webster, NY.

**3:45 PM D2.5**
AMORPHOUS SILICON THIN FILM TRANSISTORS ON KAPTON FIBERS. Eitan Bonderover, Sigurd Wagner, Dept. of Electrical Engineering, Princeton University, Princeton, NJ; Zhigang Suo, Dept. of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ.

**4:00 PM D2.6**
PREPARATION AND CHARACTERIZATION OF NANOMETER-SCALE $TiO_2$ COATED POLYCARBONATE FIBERS. Jamila Shawon, Changmo Sung, Univ of Massachusetts Lowell, Dept of Chemical Engineering, Lowell, MA; Cristopher Drew, Univ of Massachusetts Lowell, Dept of Chemistry, Lowell, MA.

**4:15 PM D2.7**
ELECTROSPINNING NANOFIBERS OF POLYANILINE(PANI)/ PMMA AND PANI/POLYESTER BLENDS. Keyur Desai, Changmo Sung, University of Massachusetts-Lowell, Dept. of Chemical Engineering, Center for Advanced Materials, Lowell, MA.

**4:30 PM D2.8**
DEPOSITION, RECRYSTALLIZATION, AND EPITAXY OF SILICON, GERMANIUM, AND GaAs ON FIBERS AND METAL WIRES FOR OPTOELECTRONIC DEVICE APPLICATIONS. Michael G. Mauk, Bryan W. Feyock, Jeremy E. Balliet, Todd R. Ruffins, AstroPower, Inc, Newark, DE.

**4:45 PM D2.9**
FTIR CHARACTERIZATION OF ELECTRO-SPIN NANOSCOPIC PZT FIBERS SYNTHESIS FROM METALLO-ORGANIC PRECURSORS. Yu Wang and Jorge J. Santiago-Aviles, University of Pennsylvania, Dept of Electrical & System Engineering, Philadelphia, PA.

**5:00 PM D2.10**
METAL OXIDE COATED ELECTROSPUN FIBERS AS ELECTRODES IN PHOTOVOLTAIC CELLS. Christopher Drew, Xianyan Wang, Ferdinando Bruno[a], Lynne Samuelson[a], Jayant Kumar, University of Massachusetts Lowell, Depts. of Chemistry and Chemical Engineering, and Center for Advanced Materials, Lowell, MA; [a]Natick Soldier Center, U.S. Army Soldier, Biological, Chemical Command, Natick, MA.

SESSION D3: POSTER SESSION
ELECTROTEXTILES
Chairs: Dick Urban and Abdelfattah M. Seyam
Monday Evening, December 2, 2002
8:00 PM
Exhibition Hall D (Hynes)

**D3.1**
WASHING OF ELECTROTEXTILES. Marty Agpaoa-Kraus, Jeremy Bowman, Andrew Riecker, Tom Tiano, Charley Carey, and Patricia Wilson, Foster-Miller, Waltham, MA; Wendy Horowitz, Edward Tierney, C.M. Offray, Watsontown, PA; Carole Winterhalter, U.S. Army Soldier Systems, Natick RD&E Center, Natick, MA.

**D3.2**
MECHANICAL TESTING OF ELECTROTEXTILE CABLES. Jeremiah Slade, Brian Farrell, Justyna Teverovsky, Jeremy Bowman, Marty Agpaoa-Kraus, Patricia Wilson, Foster-Miller, Waltham, MA; Wendy Horowitz, Edward Tierney, C.M. Offray, Watsontown, PA; Carole Winterhalter, U.S. Army Soldier Systems, Natick RD&E Center, Natick, MA.

**D3.3**
IMPROVING ELECTROTEXTILE WEARABILITY USING STIFFNESS TESTING METHODS. Jeremiah Slade, Brian Farrell, Justyna Teverovsky, Douglas Thomson, Jeremy Bowman, Marty Agpaoa-Kraus, Patricia Wilson, Foster-Miller, Material Technology Group, Waltham, MA; Carole Winterhalter, Natick RD&E Center, Natick, MA; Wendy Horowitz, Edward Tierney, C.M. Offray & Son, Watsontown, PA.

**D3.4**
TEXTILE CIRCUITS – DECONSTRUCTING THE DEVICE. Jeremy Bowman, Jeremiah Slade, Brian Farrell, Douglas Thomson, Patricia Wilson, Foster-Miller, Waltham, MA.

**D3.5**
CHARGE CONSEQUENCES IN ELECTROSPUN NANOFIBERS. Veli Kalayci, Prabir Patra, Steve Warner, Yong Kim, University of Massachusetts, Department of Textile Sciences, North Dartmouth, MA.

**D3.6**
ION DEPOSITION OF METALS FOR CONDUCTIVE FIBERS. Patricia Wilson, J. Teverovsky, B. Farrell, J. Bowman, and M. Agpaoa, J. Slade, and D. Thomson, Foster-Miller, Inc., Waltham, MA; Rod Ward, Ionic Fusion Corporation, Longmont, CO.

**D3.7**
AN ACOUSTIC ARRAY AS AN EXAMPLE OF A LARGE-SCALE ELECTRONIC FABRIC. K.A. Luthy, J.C. Braly, L.S. Mattos, E. Grant, J.F. Muth, ECE Dept, North Carolina State University, Raleigh, NC; K. Natarajan, A. Dhawan, T. Ghosh, A. Seyam, Department of Textile and Apparel, Technology and Management, North Carolina State University, Raleigh, NC.

**D3.8**
TAILORED NANOFIBER MORPHOLOGIES USING MODULATED ELECTROSPINNING FOR BIOMEDICAL APPLICATIONS. David Y. Lin, David C. Martin, Univ of Michigan, Macromolecular Science and Engineering Center, Ann Arbor, MI; Michael A. Johnson, Amgen Inc, Thousand Oaks, CA.

**D3.9**
TEXTILE BASED ANTENNAS. Justyna Teverovsky, Patricia Wilson, Brian Farrell, Jeremiah Slade, Jeremy Bowman, Marty Agpaoa, Doug Thomson, Foster-Miller, Inc., Waltham, MA; Wendy Horowitz, Ed Tierney, Offray Specialty Narrow Fabrics, LLC, Chester, NJ; John Pedersen and Joe Merrenda, BAE Systems, Greenlawn, NY; Carole Winterhalter, U.S. Army Soldier Biological and Chemical Command-Natick Soldier Center, Natick, MA.

**D3.10**
ELECTRO TEXTILES: PRESENT AND FUTURE. Karthikeyan Natarajan, North Carolina State Univ, Raleigh, NC.

SESSION D4: ELECTRONICS ON FLEXIBLE SUBSTRATES
Chairs: Sergey Rumyantsev and Michael S. Shur
Tuesday Morning, December 3, 2002
Room 201 (Hynes)

**8:30 AM *D4.1**
COMPONENTS FOR CONFORMAL AND DRAPEABLE ELECTRONIC SURFACES. Sigurd Wagner, Pai-hui I. Hsu, Rabin Bhattacharya, Eitan Bonderover, James C. Sturm, Dept of Electrical Engineering; Zhigang Suo, Dept of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ.

**9:00 AM D4.2**
LOW-VOLTAGE ORGANIC THIN FILM TRANSISTORS ON FLEXIBLE PLASTIC SUBSTRATES WITH ANODIZED $Ta_2O_5$ GATE INSULATORS. Youji Inoue, Yoshihide Fujisaki, Hiroshi Kikuchi, Shizuo Tokito, Fumio Sato, Science and Technical Research Laboratories of NHK, Tokyo, JAPAN.

**9:15 AM D4.3**
PAPER-LIKE DISPLAY UTILIZING ORGANIC ELECTROLUMINESCENT DIODES FABRICATED ON 10 MICRON-THICK POLYIMIDE FILMS. Yutaka Ohmori[a], Hirotake Kajii[a], Takayuki Taneda[a], Makoto Hikita[b], Hisataka Takenaka[b]; [a]Osaka Univ., Collaborative Res Ctr (CRCast), Suita, Osaka, JAPAN; [b]NTT Advanced Technology, Tokai, Ibaraki, JAPAN.

**9:30 AM BREAK**

**10:00 AM D4.4**
ELECTROCHROMIC MATERIALS AND DEVICES FROM LAYER-BY-LAYER ASSEMBLED POLYMER FILMS. Dean DeLongchamp, Paula T. Hammond, Massachusetts Intitute of Technology, Department of Chemical Engineering, Cambridge, MA. ♣

**10:15 AM D4.5**
DEVELOPMENT OF POLYIMIDE-BASED FLEXIBLE TACTILE SENSING SKIN. Jonathan Engel, Jack Chen, Chang Liu, Micro and Nanotechnology Laboratory, University of Illinois; Bruce R. Flachsbart, John C. Selby, Mark A. Shannon, Micro-Miniature Systems Laboratory, University of Illinois, Urbana, IL.

**10:30 AM D4.6**
A NEW FLEXIBLE STRUCTURE FOR OFETS. Annalisa Bonfiglio, Fulvia Mameli, Ornella Sanna, Univ of Cagliari, Cagliari, ITALY. ♣

**10:45 AM D4.7**
ORGANIC TRANSISTOR SENSORS AND MEMORY ELEMENTS FABRICATED VIA SOLUTION DEPOSITION. H.E. Katz, T. Someya, A. Gelperin, Bell Laboratories-Lucent Technologies, Murray Hill, NJ; M. Mushrush, A. Facchetti, T.J. Marks, Department of Chemistry, Northwestern University, Evanston, IL. ♣

**11:00 AM D4.8**
STRETCHABLE INTERCONNECTS FOR CONFORMAL INTEGRATED CIRCUITS. Stephanie Perichon Lacour, Sigurd Wagner, Princeton Univ, Dept of Electrical Engineering, Princeton, NJ; Zhenyu Huang, Zhigang Suo, Princeton Univ, Dept of Mechanical and Aerospace Engineering and Princeton Material Institute, Princeton, NJ.

**11:15 AM D4.9**
HIGH-PERFORMING SEMICONDUCTOR POLYMER DESIGNS FOR FIELD-EFFECT TRANSISTORS. Beng Ong, Yiliang Wu, Ping Liu, Sandra Gardner, Krish Murti, Xerox Research Centre of Canada, Mississauga, Ontario, CANADA; Robert Street, Xerox Palo Alto Research Center, Palo Alto, CA.

**11:30 AM D4.10**
ELECTRONIC SYSTEMS BASED ON ELECTROCHEMICAL TRANSISTORS MADE ON PLASTIC FOILS AND FINE PAPER. Peter Andersson, David Nilsson, Thomas Kugler, Magnus Berggren, Linkoping University and Acreo institute, ITN, Norrkoping, SWEDEN. ♣

**11:45 AM D4.11**
HIGH SPEED RESPONSE OF ORGANIC LIGHT EMITTING DIODES AND PHOTODETECTORS FABRICATED ON A POLYMERIC SUBSTRATE FOR POLYMERIC OPTICAL INTEGRATED CIRCUITS. Yutaka Ohmori, Hirotake Kajii, Takayuki Taneda, Masamitsu Kaneko, Tsubasa Fujiki and Kazuya Takahashi, Osaka University, Collaborative Research Center for Advanced Science and Technology (CRCAST), Osaka, JAPAN.

SESSION D5: POWER SUPPLIERS FOR ELECTRONICS ON NON CONVENTIONAL SUBSTRATES
Chair: Robert H. Reuss
Tuesday Afternoon, December 3, 2002
Room 201 (Hynes)

**1:30 PM *D5.1**
THIN-FILM SOLID-STATE LITHIUM BATTERY FOR BODY

WORN ELECTRONICS. Joseph McDermott and Paul C. Brantner, Infinite Power Solutions, Littleton, CO.

**2:00 PM D5.2**
FLUORESCENT FIBERS COUPLED TO MONOLITHIC PHOTOVOLTAIC ARRAYS FOR SUNLIGHT CONVERSION. Oleg V. Sulima, Jeffrey A. Cox, Paul E. Sims, Michael G. Mauk, AstroPower Inc., Newark, DE.

**2:15 PM D5.3**
POWER FIBERS: THIN-FILM BATTERIES ON FIBER SUBSTRATES. Bernd J. Neudecker, Martin H. Benson, ITN Energy Systems Inc, Littleton, CO.

**2:30 PM D5.4**
IONIC LIQUID-BASED GEL ELECTROLYTE COMPOSITIONS FOR DYE SENSITIZED SOLAR CELLS. K.G. Chittibabu, S. Hadjikyriacou, Konarka Technologies, Lowell, MA.

**2:45 PM D5.5**
POWER GENERATION FROM PIEZOELECTRIC LEAD ZIRCONATE TITANATE FIBERS. Farhad Mohammadi, Ajmal Khan, and Richard B. Cass, Advanced Cerametrics, Inc., Lambertville, NJ.

**3:00 PM BREAK**

SESSION D6: PRINTING FOR ELECTRONICS
Chair: Howard E. Katz
Tuesday Afternoon, December 3, 2002
Room 201 (Hynes)

**3:30 PM D6.1**
NON-LITHOGRAPHIC FABRICATION OF POLYMERIC ELECTRONIC DEVICES. Michael L. Chabinyc, William S. Wong, Kateri E. Paul, Alberto Salleo, Raj B. Apte, Robert A. Street, Palo Alto Research Center, Electronic Materials Lab, Palo Alto, CA.

**3:45 PM D6.2**
POLYMER-ON-POLYMER STAMPING ON MICRO- AND NANO-SCALES. Shoshana R. Gourdin, Paula T. Hammond, MIT, Department of Chemical Engineering, Cambridge, MA; Seth Coe, Vladimir Bulovic, MIT, Department of Electrical Engineering and Computer Science, Cambridge, MA.

**4:00 PM D6.3**
AN APPROACH TOWARDS THE PRINTING OF POLYMER CIRCUITS. Alexander Knobloch, Adolf Bernds, Wolfgang Clemens, Siemens Corporate Technology, Erlangen, GERMANY.

**4:15 PM D6.4**
LARGE AREA DRY PRINTING OF ORGANIC TRANSISTORS. Graciela B. Blanchet[a], J.A. Rogers[b], Yueh-Lin Loo[b], F. Gao[a], C.R. Fincher[a]; [a]DuPont, Central Research, Wilmington, DE; [b]Bell Laboratories, Lucent Technologies, Murray Hill, NJ.

**4:30 PM D6.5**
SOFT CONTACTS BY LAMINATION AND NANOTRANSFER PRINTING FOR PLASTIC ELECTRONICS. Yueh-Lin Loo, John A. Rogers, Bell Laboratories, Lucent Technologies, Murray Hill, NJ.

**4:45 PM D6.6**
ACTIVE MATRIX DISPLAYS BASED ON ALL-ORGANIC ELECTROCHEMICAL SMART PIXELS PRINTED ON PAPER. Peter Andersson, David Nilsson, Per-Olof Svensson, Miaoxiang Chen, Linkoping Univ, Dept of Science and Technology, Norrkoping, SWEDEN; Anna Malmström, Tommi Remonen, Thomas Kugler, Acreo Institute, Norrkoping, SWEDEN; Magnus Berggren, Linkoping Univ, Dept of Science and Technology, Norrkoping, SWEDEN.

SESSION D7: POSTER SESSION
ELECTRONICS ON FLEXIBLE SUBSTRATES
Chairs: Sigurd Wagner and Paula T. Hammond
Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

**D7.1**
CdSe NANOPARTICLE/METAL-ORGANIC INKS FOR PRINTABLE ELECTRONICS. Doug Schulz, CeraMem Corporation, Waltham, MA.

**D7.2**
Abstract Withdrawn

**D7.3**
HIGH PERFORMANCE POLYMER THIN FILM TRANSISTORS ARRAY PRINTED ON A FLEXIBLE POLYCARBONATE SUBSTRATE. Sung Kyu Park, Jeong In Han, Dae Gyu Moon, Won Keun Kim, Yong Hoon Kim, Korea Electronics Technology Institute, Information Display Research Center, Pyungtaek, KOREA.

**D7.4**
PHOTOVOLTAIC DEVICES CONSTRUCTED WITH LAYER-BY-LAYER ASSEMBLED POLYELECTROLYTE FILM. Hiroaki Tokuhisa, Paula T. Hammond, Massachusetts Institute of Technology, Dept of Chemical Engineering, Cambridge, MA.

**D7.5**
COMPARISON OF GATE DIELECTRIC LAYERS FOR ORGANIC THIN FILM TRANSISTORS FOR FLEXIBLE DISPLAYS. G.Y. Kim, J.I. Hong, S. Hong, J. Kang, D.Y. Yoon, Seoul National Univ, Seoul, KOREA; S. Hwang, Y.C. Joo, Seoul National Univ, School of Materials Science and Eng, Seoul, KOREA.

**D7.6**
BETTER CONTACTS BETWEEN METAL ELECTRODES AND ORGANIC SEMICONDUCTORS USING SELF-ASSEMBLY MONOLAYERS. Seong Hyun Kim, Yong Suk Yang, Jeong-Ik Lee, Hyo Young Lee, Hye Yong Chu, Taehyoung Zyung, Electronics and Telecommunications Research Institute (ETRI), Daejon, KOREA.

**D7.7**
HIGH PERFORMANCE ORGANIC FIELD EFFECT TRANSISTOR WITH A NOVEL TOP-AND-BOTTOM CONTACT (TBC) STRUCTURE. Manabu Yoshida, Sei Uemura, Satoshi Hoshino, Takehito Kodzasa, Satoshi Haraichi and Toshihide Kamata, Photonics Research Institute, National Institute of Advanced Industrial Science and Technology, Tsukuba, JAPAN.

**D7.8**
EFFECT OF PROCESS VARIABLES AND DOPANTS ON CHARACTERISTICS OF ELECTROCHEMICALLY DEPOSITED PEDOT FILMS. Mihir A. Oka, Stephen S. Hardaker, Farzad Nazir, Richard V. Gregory, School of Materials Science and Engineering, Clemson University, Clemson, SC; Keith R. Brenneman, Philip M. Lessner, KEMET Electronics Corporation, Greenville, SC.

**D7.9**
SYNTHESIS AND CHARACTERIZATION OF 2,5-BIS[(3,4-ETHYLENEDIOXYTHIOPHENE)THIEN-2-YL]-3-SUBSTITUTED THIOPHENES. Michael F. Pepitone, Stephen S. Hardaker, Kalya Eaiprasertsak, and Richard V. Gregory, NSF Center for Advanced Engineering Fibers and Films, School of Materials Science and Engineering, Clemson University, Clemson, SC.

**D7.10**
INFLUENCE OF GATE DIELECTRIC LAYERS ON THE MOBILITY OF ORGANIC THIN FILM TRANSISTORS FOR FLEXIBLE DISPLAYS. G.Y. Kim, J. Kang, J.I. Hong, S. Hong, D.Y. Yoon, Seoul National Univ, School of Chemistry, Seoul, KOREA; S. Hwang, Y.C. Joo, Seoul National Univ, School of Materials Science and Eng, Seoul, KOREA.

**D7.11**
BISPERFLUOROPHENYL-SUBSTITUTED THIOPHENE OLIGOMERS. ORGANIC SEMICONDUCTORS WITH COMPLEMENTARY-TYPE CARRIER MOBILITY. Antonio Facchetti, Howard Katz, Tobin J. Marks.

**D7.12**
C-V CHARACTERIZATION OF PULSED PLASMA ALLYLAMINE DIELECTRICS. Yifan Xu, Department of Electrical Engineering, The Ohio State University, Columbus, OH; Paul R. Berger, Department of Electrical Engineering, Department of Physics, The Ohio State University, Columbus, OH; Jai Cho and Richard B. Timmons, Department of Chemistry and Biochemistry, University of Texas, Arlington, TX.

**D7.13**
BIOMIMETIC SYNTHESIS OF WATER SOLUBLE CONDUCTIVE POLYPYRROLE AND POLY(3,4 ETHYLENEDIOXY-THIOPHENE). Ferdinando F. Bruno, Lynne A. Samuelson, Materials Science Team, Natick Soldier Center, U.S. Army Soldier and Biological, Chemical Command, Natick, MA; Jacqueline M. Fortier, Ramaswamy Nagarajan, Jayant Kumar, Departments of Physics and Chemistry, Center for Advanced Materials, University of Massachusetts Lowell, Lowell, MA.

**D7.14**
CONDUCTING POLYMER FOR COATING ON LARGE-AREA FLEXIBLE SUBSTRATES. Zhexiong Tang, Ping Ren, Neil Alvarez, Robert Clark, Sze C. Yang, Dept of Chemistry, Univ of Rhode Island, Kingston, RI.

**D7.15**
VT-SHIFT COMPENSATING AMORPHOUS SILICON PIXEL CIRCUITS FOR FLEXIBLE AMOLED DISPLAYS. Kapil Sakariya, Peyman Servati, Denis Striakhilev, Arokia Nathan, Univ of Waterloo, Dept of Electrical and Computer Engineering, Waterloo, Ontario, CANADA.