

Primary MRSEC Support

IRG1

O. Farago, P. **Pincus**, “Statistical mechanics of bilayer membrane with a fixed projected area,” *J. Chem. Phys.* **120**, 2934 (2004)

J. **Israelachvili**, N.A. Alcantar, N. Maeda, T. Mates, M. Ruths, “Preparing contamination-free mica substrates for surface characterization, force measurements and imaging,” *Langmuir* **20**, 3616 (2004)

J. **Israelachvili**, I. Ladyzinski, “The physico-chemical basis of self-assembling structures,” in Forces, Growth and Form in Soft Condensed Matter: At the Interface between Physics and Biology, Eds. Arne T. Skjeltorp and Alexander V. Belushkin , NATO series, (Kluwer, 2004), 1

IRG2

P.M. Forster, A.R. Burbank, C. Livage, G. Férey, A.K. **Cheetham**, “The role of temperature in the synthesis of hybrid inorganic-organic materials: The example of cobalt succinates,” *JCS Chem. Comm.*, 368 (2004)

P.M. Forster, A.K. **Cheetham**, “The role of reaction conditions and ligand flexibility in metal-organic hybrid materials – Examples from metal diglycolates and iminodiacetates,” *Microporous & Mesoporous Materials* **73**, 56 (2004)

P.M. Forster, M.M. Tafoya, A.K. **Cheetham**, “Synthesis and characterization of $\text{Co}_7(\text{OH})_{12}(\text{C}_2\text{H}_4\text{S}_2\text{O}_6)(\text{H}_2\text{O})_2$ – A single crystal structural study of a ferrimagnetic layered cobalt hydroxide,” *J. Phys. Chem. Solids* **65**, 11 (2004)

K.C. Kam, F.L. Deepak, A.K. **Cheetham**, C.N.R. Rao, “In₂O₃ nanowires, nanobouquets and nanotrees,” *Chem. Phys. Lett.* **397**, 329 (2004)

K.C. Kam, F.L. Deepak, G. Gundiah, C.N.R. Rao, A.K. **Cheetham**, “Properties of nanostructured GaN prepared by different methods,” *Solid State Sciences* **6**, 1107 (2004)

D.S. Kim, P.M. Forster, G. Diaz de Delgado, S.-E. Park, A.K. **Cheetham**, “Metal oxygen metal arrays in lamellar hybrid materials: Cobalt and manganese 4-cyclohexene-1,2-dicarboxylates,” *J. Chem. Soc., Dalton Trans.*, 3365 (2004)

D.S. Kim, P.M. Forster, R. Le Toquin, A.K. **Cheetham**, “A thermally stable nanoporous nickel 5-sulfoisophthalate; crystal structure and adsorption properties,” *Chem. Commun.*, pg 2148 (2004)

IRG3

E.G. Bellomo, P. Davidson, M. Impérator-Clerc, T.J. **Deming**, “Aqueous cholesteric liquid crystals using uncharged rodlike polypeptides,” *J. Amer. Chem. Soc.* **126**, 9101 (2004)

E.G. Bellomo, M.D. Wyrsta, L. Pakstis, D.J. Pochan, T.J. **Deming**, “Stimuli-responsive polypeptide vesicles by conformation-specific assembly,” *Nature Mat.* **3**, 244 (2004)

K.R. Brzezinska, T.J. **Deming**, “Synthesis of AB diblock copolymers by atom-transfer radical polymerization (ATRP) and living polymerization of α -amino acid-N-carboxyanhydrides,” *Macromolecular Bioscience* **4**, 566 (2004)

R.C. Hayward, P.C.A. Alberius, E.J. **Kramer**, B.F. **Chmelka**, “Thin films of bicontinuous cubic mesostructured silica templated by a nonionic surfactant,” *Langmuir* **20**, 5998 (2004)

T.A. Ostromel, G.D. **Stucky**, “Free-standing mesoporous titania films with anatase nanocrystallites synthesized at 80 °C,” *Chem. Commun.*, 1016 (2004)

R.A. Segalman, A. Jacobson, E.J. **Kramer**, S.R. Lustig, "Polymer diffusion in semicrystalline polymers using secondary ion mass spectroscopy," *Macromolecules* **37**, 2613 (2004)

IRG4

None

Partial MRSEC Support

IRG1

M. Benz, N. Chen, J. **Israelachvili**, "Lubrication and wear properties of grafted polyelectrolytes, hyaluronan and hylan, measured in the surface forces apparatus," *J. Biomedical Materials Research: Part A* **71**, 6 (2004)

C. Boyer, J. **Zasadzinski**, "The vesosome: A new liposome drug delivery system," *Microscopy and Microanalysis* **10**, 422 (2004)

M.C. Choi, T. Pfohl, Z. Wen, Y. Li, M.W. Kim, J.N. **Israelachvili**, C.R. **Safinya**, "Ordered patterns of liquid crystal toroidal defects by microchannel confinement," *PNAS (Proceedings of the National Academy of Sciences)* **101**, 17340 (2004)

A.F. Chu-Kung, K.N. Bozzelli, N.A. Lockwood, J.R. Haseman, K.H. Mayo, M.V. **Tirrell**, "Promotion of peptide antimicrobial activity by fatty acid conjugation," *Bioconjugate Chemistry* **15**, 530 (2004)

A.F. Chu-Kung, K.N. Bozzelli, N.A. Lockwood, M.V. **Tirrell**, "Effect on fatty acid conjugation on antimicrobial peptide activity," *MRS Conf. Proc.*, Fall 2003, Vol. EXS-1 (2004)

A. Chworos, I. Sevencan, A.Y. Koifman, P. Weinkam, E. Oroudjev, H.G. **Hansma**, L. **Jaeger**, "Building programmable jigsaw puzzles with RNA," *Science* **306**, 2068 (2004)

A. Ekani-Nkodo, A. Kumar, D. Kuchnir **Fygenson**, "Joining and scission in the self assembly of nanotubes from DNA tiles," *Phys. Rev. Lett.* **93**, 268301 (2004)

K. Ewert, N.L. Slack, A. Ahmad, H. Evans, A.J. Lin, C.E. **Samuel**, C.R. **Safinya**, "Cationic lipid-DNA complexes for gene therapy: Understanding the relationship between complex structures and gene delivery pathways at the molecular level," *Current Medicinal Chemistry* **11**, 1241 (2004)

D. Gurovich, C. Macosko, M. **Tirrell**, "The influence of block copolymers on silica-filled polyisoprene," *Rubber Chemistry and Technology* **76**, 13 (2004)

D. Gurovich, M. **Tirrell**, "The influence of filler-filler and filler-polymer interactions on the physical properties of silica-filled liquid polyisoprene," *Rubber Chemistry and Technology* **76**, 1 (2004)

Y. Hu, I. Doudevski, D. Wood, M. Moscarello, C. Husted, C. Genain J. **Zasadzinski**, J. **Israelachvili** , "Synergistic interactions of lipids and myelin basic proteins," *Proc. of the National Academy of Sciences* **101**, 13466 (2004)

E. Kisak, B. Coldren, C. Boyer, C. Evans, J. **Zasadzinski**, "The Vesosome – a multicompartment drug delivery vehicle," *Current Medicinal Chemistry* **11**, 199 (2004)

E. Kokkoli, S.E. Ochsenhirt, M. **Tirrell**, "Collective and single-molecule interactions of a5b1 integrins," *Langmuir* **20**, 2397 (2004)

D. Kuchnir **Fygenson**, D.J. Needleman, K. Sneppen, "Variability-based sequence alignment identifies residues responsible for functional differences in alpha and beta tubulin," *Protein Science* **13**, 25 (2004)

N.A. Lockwood, J.R. Haseman, M.V. **Tirrell**, K.H. Mayo, "Acylation of SC4 dodecapeptide increases bactericidal potency against gram-positive bacteria, including drug-resistant strains," *Biochem. J.* **378**, 93 (2004)

A. Martin-Herranz, A. Ahmad, H.M. Evans, K. Ewert, U. Schulze, C.R. **Safinya**, "Surface functionalized cationic lipid-DNA complexes for gene delivery: PEGylated lamellar complexes exhibit distinct DNA-DNA interaction regimes," *Biophysical J.* **86**, 1160 (2004)

D.J. Needleman, M. Ojeda-Lopez, K. Ewert, J. Jones, H.P. Miller, L. **Wilson**, C.R. **Safinya**, "Synchrotron X-ray diffraction study of microtubules buckling and bundling under osmotic stress: A probe of interprotofilament bond strength," *Physical Review Letters* **93**, 198104 (2004)

D.J. Needleman, M. Ojeda-Lopez, U. Raviv, H.P. Miller, L. **Wilson**, C.R. **Safinya**, "Higher order assembly of microtubules by counter-ions: From hexagonal bundles to living necklaces," *Proc. of the National Academy of Sciences USA* **101**, 16099 (2004) (Article Highlighted on November 16 Cover)

C.N. Newton, M. Wagenbach, Y. Ovechkina, L. Wordemann, L. **Wilson**, "MCAK, a Kin 1 kinesin, increases the catastrophe frequency of steady-state HeLa cell microtubules in an ATP-dependent manner in vitro," *FEBS Letters* 572, Issues 1-3, 80 (2004)

A. Nikova, V. Gordon, G. Cristobal, R. Talingting, D. Bell, C. Evans, M. Joanicot, J. **Zasadzinski**, D. Weitz, "Swollen vesicles and multiple emulsions from block copolymers," *Macromolecules* **37**, 2215 (2004)

J.L. Ross, C.D. Santangelo, V. Makrides, D. Kuchnir **Fygenson**, "Tau induces cooperative taxol binding to microtubules," *Proc. of the National Academy of Science* **101**, 12910 (2004)

P.W.K. Rothemund, A. Ekani-Nkodo, N. Papadakis, A. Kumar, D. Kuchnir **Fygenson**, E. Winfree, "Design and characterization of programmable DNA nanotubes," *J. Amer. Chem. Soc.* **126**, 16344 (2004)

R. Tannenbaum, S. King, J. Lecy, M. **Tirrell**, L. Potts, "Infrared study of the kinetics and mechanism of adsorption of acrylic polymers on alumina surfaces," *Langmuir* **20**, 4507 (2004)

R. Toomey, J. Mays, M. **Tirrell**, "In situ thickness determination of adsorbed layers of poly(2-vinylpyridine)-polystyrene diblock copolymers by ellipsometry," *Macromolecules* **37**, 905 (2004)

R. Tu, K. Mohante, M. **Tirrell**, "Liposomal targeting through peptide-amphiphile functionalization," *American Pharmaceutical Review* **7**, 36 (2004)

R. Tu, M. **Tirrell**, "Bottom-up design of biomimetic assemblies," *Advanced Drug Delivery Reviews* **56**, 1537 (2004)

R.M. van Zanten, B.A. Coldren, D. Danino, J. **Zasadzinski**, "Controlling the size distribution of spontaneous vesicles by incorporating tethered polymers," *Microscopy and Microanalysis* **10**, 420 (2004)

IRG2

B.J. Campbell, T.R. Welberry, R.W. Broach, H.W. Hong, A.K. **Cheetham**, "Elucidation of zeolite microstructure by synchrotron X-ray diffuse scattering," *J. Appl. Cryst.* **37**, 187 (2004)

J.-S. Chang, J.S. Hwang, S.H. Jhung, S.-E. Park, P.M. Forster, G. Férey, A.K. **Cheetham**, "Nanoporous nickel phosphates: A new class of shape selective catalyst," *Angew. Chem. Int'l. Ed.* **43**, 2819 (2004)

A.K. **Cheetham**, P.M. Forster, "Nanoporous Materials," in Chemistry of Nanomaterials, Eds. C. N. R. Rao, A. Muller and A. K. Cheetham, Wiley-VCH (Weihenm, 2004)

M. Colligan, P.M. Forster, A.K. **Cheetham**, Y. Lee, T. Vogt, J.A. Hriljac, "Synchrotron X-ray powder diffraction and computational investigation of purely siliceous zeolite Y under pressure," *J. Amer. Chem. Soc.* **126**, 12015 (2004)

G.F. Fantner, H. Birkedal, J.H. Kindt, T. Hassenkam, J.C. Weaver, J.A. Cutroni, B.L. Bosma, L. Bawazar, M.M. Finch, G.A.G. Cidade, D.E. **Morse**, G.D. **Stucky**, P.K. **Hansma**, "Influence of the degradation of the organic matrix on the microscopic fracture behavior of trabecular bone," *Bone* **35**, 1013 (2004)

T. Gutsmann, G.E. Fantner, J.H. Kindt, M. Venturoni, S. Danielsen, P.K. **Hansma**, "Force spectroscopy of collagen fibers to investigate their mechanical properties and structural organization," *Biophysics J.* **86**, 1 (2004)

T. Hassenkam, G.E. Fantner, J.A. Cutroni, J.C. Weaver, D.E. **Morse**, P.K. **Hansma**, "High resolution AFM imaging of intact and fractured trabecular bone," *Bone* **35**, 4 (2004)

T. Hassenkam, T. Gutsmann, P. **Hansma**, J. Sagert, J.H. Waite, "Giant bent-core mesogens in the thread forming process of marine mussels," *Biomacromolecules* **5**, 1351 (2004)

N. Hedin, R. Graf, S.C. Christiansen, C. Gervais, R.C. Hayward, J. Eckert, B.F. **Chmelka**, "Structure of a surfactant-templated silicate framework in the absence of 3D crystallinity," *J Amer. Chem. Soc.* **126**, 9425 (2004)

S.H. Jhung, J.-S. Chang, S.-E. Park, P.M. Forster, G. Férey, A.K. **Cheetham**, "Template-free synthesis of the nanoporous nickel phosphate VSB-5 under microwave irradiation," *Chem. Mater.* **16**, 1394 (2004)

J.H. Kindt, G.E. Fantner, J.A. Cutroni, P.K. **Hansma**, "Rigid design of fast scanning probe microscopes using finite element analysis," *Ultramicroscopy* **100**, 259 (2004)

J.H. Kindt, G.E. Fantner, J.B. Thompson, P.K. **Hansma**, "Automated wafer-scale fabrication of electron beam deposited tips for atomic force microscopes using pattern recognition," *Nanotechnology* **15**, 1131 (2004)

M. Komelj, C. Ederer, M. Faehnle "Anisotropy of orbital moments and magnetic dipole term T_z in CrO_2 : An ab initio study", *Phys. Rev. B* **69**, 132409 (2004)

A.F. Moreira dos Santos, A.K. **Cheetham**, W. Tian, X. Pan, Y. Jia, N.J. Murphy, J. Lettieri, D.G. Schlom, "Epitaxial growth and properties of metastable BiMnO_3 thin films," *Appl. Phys. Lett.* **84**, 91 (2004)

S. Neeraj, T. Loiseau, C.N.R. Rao, A.K. **Cheetham**, "Synthesis and structure of $[C_3N_2H_5][Cu(H_2PO_4)_2Cl].H_2O$ with a chain structure; the first example of an organically-templated copper (II) phosphate," *Solid State Sciences* **6**, 1169 (2004)

S. Neeraj, C.N.R. Rao, A.K. **Cheetham**, "Open-framework zinc and cobalt phosphates synthesized by the tributylphosphate route," *J. Mater. Chem.* **14**, 814 (2004)

C.N.R. Rao, G. Gundiah, F.L. Deepak, A. Govindaraj, A.K. **Cheetham**, "Carbon-assisted synthesis of inorganic nanowires," *J. Mater. Chem.* **14**, 440 (2004)

R.J. Stewart, J.C. Weaver, D.E. **Morse**, J.H. Waite, "The tube cement of *Phragmatopoma californica*: a solid foam," *J. Exper. Biol.* **207**, 4727-4734 (2004)

J.H. Waite, H.C. Lichtenegger, G.D. **Stucky**, P.K. **Hansma**, "Exploring molecular and mechanical gradients in structural bioscaffolds," *Biochemistry* **22**, 7653 (2004)

Y. Wu, T. Livneh, Y.X. Zhang, G. Cheng, J. Wang, J. Tang, M. **Moskovits**, G.D. **Stucky**, "Templated synthesis of highly ordered mesostructured nanowires and nanowire arrays," *Nano Letters* **4**, 2337 (2004)

B.A. Wustman, D.E. **Morse**, J.S. Evans, "Structural characterization of the N-terminal mineral binding domains from the molluscan crystal-modulating biominerization proteins, AP7 and AP24," *Biopolymers* **74**, 363-376 (2004)

IRG3

V. Breedveld, A.P. Nowak, J. Sato, T.J. **Deming**, D.J. **Pine**, "Rheology of block copolyptide solutions: Hydrogels with tunable properties" *Macromolecules* **37**, 3943 (2004)

J. Chiu, S. Bishop, D.J. **Pine**, B.F. **Chmelka**, "Friedel-crafts alkylation properties of aluminosilica SBA-15 meso/macroporous monoliths and mesoporous powders," *J. Catal.* **221**, 400 (2004)

S.J. Dwight, B.S. Gaylord, J. Hong, G.C. **Bazan**, "Perturbation of fluorescence by nonspecific interactions between anionic poly(phenylenevinylene)s and proteins: Implications for biosensors," *J. Amer. Chem. Soc.* **126**, 16850 (2004)

L.E. Euliss, T.M. Trnka, T.J. **Deming**, G.D. **Stucky**, "Design of a doubly hydrophilic block copolyptide that directs the formation of calcium carbonate microspheres," *Chem. Commun.* 1736 (2004)

K.L. Frindell, J. Tang, J.H. Harrel, G.D. **Stucky**, "Enhanced mesostructural order and changes to optical and electrochemical properties induced by the addition of cerium(III) to mesoporous titania thin films," *Chem. Mater.* **16**, 3524 (2004)

R.C. Hayward, P.C.A. Alberius, E.J. **Kramer**, B.F. **Chmelka**, "Thin films of bicontinuous cubic mesostructured silica templated by a nonionic surfactant," *Langmuir* **20**, 5998 (2004)

T.F. Jaramillo, S.-H. Baeck, A. Kleiman, K.-S. Choi, G.D. **Stucky**, E.W. **McFarland**, "Automated electrochemical synthesis and photoelectrochemical characterization of Zn_{1-x}CoxO thin films for solar hydrogen production," *J. Comb. Chem.*, published online (December 2004)

B. Liu and G.C. **Bazan**, "Homogeneous fluorescence-based DNA detection with water-soluble conjugated polymers," *Chem. Materials* **16**, 4467 (2004)

B.J. McKenna, H. Birkedal, M.H. Bartl, T.J. **Deming**, G.D. **Stucky**, "Micrometer-sized spherical assemblies of polypeptides and small molecules by acid-base chemistry," *Angew. Chem. Int'l. Ed.* **43**, 5652 (2004)

B.J. McKenna, H. Birkedal, M.H. Bartl, T.J. **Deming**, G.D. **Stucky**, "Self-assembling microspheres from charged functional polyelectrolytes and small-molecule counterions," in Biological and Bioinspired Materials and Devices, edited by Joanna Aizenberg, William J. Landis, Christine Orme, and Rizhi Wang (Mater. Res. Soc. Symp. Proc. 823, Warrendale PA 2004), paper no. W4.12, pp. 23-28

N.A. Melosh, C.A. Steinbeck, B.J. Scott, R.C. Hayward, P. Davidson, G.D. **Stucky**, B.F. **Chmelka**, "Mesostructured silica/block copolymer composites as hosts for optically limiting tetraphenylporphyrin dye molecules," *J. Phys. Chem. B.* **108**, 11909 (2004)

C.A. Steinbeck, N. Hedin, B.F. **Chmelka**, "Interactions of charged porphyrins with non-ionic triblock copolymer hosts in aqueous solutions," *Langmuir* **20**, 10399 (2004)

S. Wang and G.C. **Bazan**, "Solvent-dependent aggregation of a water-soluble poly(fluorene) controls energy transfer to chromophore-labeled DNA," *Chem. Comm.* **21**, 2508 (2004)

S. Wang, B.S. Gaylord, G.C. **Bazan**, "Collective optical behavior of cationic water soluble dendrimers," *Adv. Materials* **16**, 2127 (2004)

S. Wang, B.S. Gaylord, G.C. **Bazan**, "Fluorescein provides a resonance gate for FRET from conjugated polymers to DNA intercalated dyes," *J. Amer. Chem. Soc.* **126**, 5446 (2004)

Q. Wang, T. Taniguchi, G.H. **Fredrickson**, "Self-consistent field theory of polyelectrolyte systems," *J. Phys. Chem. B* **108**, 6733 (2004)

Q-H. Xu, B.S. Gaylord, S. Wang, G.C. **Bazan**, D.Moses, A.J. **Heeger**, "Time-resolved energy transfer in DNA sequence detection using water-soluble conjugated polymers: The role of electrostatic and hydrophobic interactions," *PNAS* **101**, 11634 (2004)

IRG4

S.A. Baeurle, G.H. **Fredrickson**, A.A. Gusev, "Prediction of elastic properties of a poly-(styrene-butadiene-styrene) copolymer using a mixed finite element approach," *Macromolecules* **37**, 5784 (2004)

M. Benz, T. Gutsmann, N. Chen, R. Tadmor, J. **Israelachvili**, "Correlation of AFM and SFA measurements concerning the stability of supported lipid bilayers," *Biophys. J.* **86**, 870 (2004)

J.S. **Langer**, “Dynamics of shear-transformation zones in amorphous plasticity: Formulation in terms of an effective disorder temperature,” *Phys. Rev. E* **70**, 041502 (2004)

J.S. **Langer**, M.L. Falk, L. Pechenik, “Thermal effects in the shear-transformation-zone theory of amorphous plasticity: Comparisons to metallic glass data,” *Phys. Rev. E* **70**, 011507 (2004)

L.G. **Leal** “Flow induced coalescence of drops in a viscous fluid,” (APS Fluid Dynamics Prize Lecture), *Physics of Fluids* **16**, 1833 (2004)

Seed

S.H. Baeck, T.F. Jaramillo, D.H. Jeong, E.W. **McFarland**, “Parallel synthesis and characterization of photoelectrochemically and electrochromically active tungsten molybdenum oxides,” *Chem. Comm.*, 390 (2004)

T.F. Jaramillo, S.-H. Baeck, A. Kleiman-Shwarsstein, E.W. **McFarland**, “Combinatorial electrochemical synthesis and screening of mesoporous ZnO for photocatalysis,” *Macromol. Rapid Commun.* **25**, 297 (2004)

B. Liu, S. Baudrey, L. **Jaeger**, G.C. **Bazan**, “Characterization of tectoRNA assembly with cationic conjugated polymers,” *J. Amer. Chem. Soc.* **126**, 4076 (2004)

J.W. Lu, D. O. Klenov, S. **Stemmer**, “Influence of strain on the dielectric relaxation of pyrochlore bismuth zinc niobate thin films,” *Appl. Phys. Lett.* **84**, 957 (2004)

K. Page, T. Proffen, H. Terrones, M. Terrones, L. Lee, Y. Yang, S. **Stemmer**, R. **Seshadri**, A.K. **Cheetham**, “Direct observation of the structure of gold nanoparticles by total scattering powder neutron diffraction,” *Chem. Phys. Lett.* **393**, 385 (2004)

K. Ramesha, R. **Seshadri**, "Solvochemical preparation of ferromagnetic sub-micron spinel CuCr₂Se₄ particles," *Solid State Sciences* **6**, 841 (2004)

K. Ramesha, R. **Seshadri**, Claude Ederer, T. He, M.A. Subramanian, "An experimental and computational investigation of structure and magnetism in pyrite Co_{1-x}FexS₂: Chemical bonding and half-metallicity," *Phys. Rev. B* **70**, 214409 (2004)

J. Tang, Y. Wu, E.W. **McFarland**, G.D. **Stucky**, "Synthesis and photocatalytic properties of highly crystalline and ordered mesoporous TiO₂ thin films," *Chem. Commun.* **14**, 1670 (2004)

E.S. Toberer, J.C. Weaver, K. Ramesha, R. **Seshadri**, "Macroporous monoliths of functional perovskite materials through assisted metathesis," *Chem. Mater.* **16**, 2194 (2004)

Shared Facilities

L. Andruzzi, A. Hexemer, X. Li, C.K. Ober, E.J. **Kramer**, .G. Galli, E. Chiellini, D.A. Fischer, "Control of surface properties using fluorinated polymer brushes produced by surface-initiated controlled radical polymerization," *Langmuir* **20**, 10498 (2004)

M.H. Bartl, S.W. Boettcher, E.L. Hu, G.D. **Stucky**, "Dye-activated hybrid organic/inorganic mesostructured titania waveguides," *J. Am. Chem. Soc.* **126**, 10826 (2004)

M.H. Bartl, S.P. Puls, J. Tang, H.C. Lichtenegger, G.D. **Stucky**, "Cubic mesoporous frameworks with a mixed semiconductor nanocrystalline wall structure and enhanced sensitivity to visible light," *Angew. Chem. Int. Ed.* **43**, 3037 (2004)

J.J. Benkoski, E.J. **Kramer**, H. Yim, M.S. Kent, J. Hall, "The effects of network structure on the resistance of silane coupling agent layers to water-assisted crack growth," *Langmuir* **20**, 3246 (2004)

W.G. Bouwman, R. Pynn, M.T. Rekveldt, "Comparison of SANS and SESANS," *Physica B* **350**, Issues 1-3, Supp. 1, E787 (2004)

N.F. Bouxsein, L.S. Hirst, Y. Li, C.R. **Safinya**, Z. Abu Samah, N. McDonald, R. Pynn, “Ordering of filamentous proteins and associated molecules through confinement in micro-channels,” *Appl. Phys. Lett.* **85**, 5775 (2004)

J. Brown, F. Wu, P.M. Petroff, J.S. **Speck**, “GaN quantum dot density control by rf-plasma molecular beam epitaxy,” *Appl. Phys. Lett.* **84**, 690 (2004)

H.D. Ceniceros, G.H. **Fredrickson**, “Numerical solution of polymer self-consistent field theory,” *Multiscale Modeling & Sim.* **2**, 452 (2004)

M.C. Choi, T. Pfohl, Z. Wen, Y. Li, M.W. Kim, J.N. **Israelachvili**, C.R. **Safinya**, “Ordered patterns of liquid crystal toroidal defects by microchannel confinement,” *Proc. of National Academy of Sciences (PNAS)* **101**, 17340 (2004) (Highlighted on cover)

J. Chou, N.R. Franklin, S.-H. Baeck, T.F. Jaramillo, E.W. **McFarland**, “Gas-phase catalysis by micelle derived Au nanoparticles on oxide supports” *Catal. Lett.* **95**, 107 (2004)

M.D. Craven, P. Waltereit, J.S. **Speck**, S.P. DenBaars, “Well-width dependence of photoluminescence emission from a-plane GaN/AlGaN multiple quantum wells,” *Appl. Phys. Lett.* **84**, 496 (2004)

M.D. Craven, F. Wu, A. Chakraborty, B. Imer, U.K. Mishra, S.P. DenBaars, J.S. **Speck**, “Microstructural evolution of a-plane GaN grown a-plane SiC by metalorganic chemical vapor deposition,” *Appl. Phys. Lett.* **84**, 1281 (2004)

S.J. Diamanti, V. Khanna, A. Hotta, D. Yamakawa, F. Shimizu, E.J. **Kramer**, G.H. **Fredrickson**, G.C. **Bazan**, “Synthesis of block copolymers of ethylene and 5-norbornen-2-yl acetate,” *J. Amer. Chem. Soc.* **126**, 10528 (2004)

M.R. Fitzsimmons, H. Fritzsche, M. Gierlings, J. Major, R. Pynn, “Measuring scattering angles with neutron spin echo,” *Nucl. Instrum. and Methods in Physics Research A* **529**, Issues 1-3, 10 (2004)

M. Ghosh, G. Lawes, A. Gayen, G.N. Subbanna, M.A. Subramanian, A.P. Ramirez, R. **Seshadri**, “A novel route to toluene soluble magnetic oxide nanoparticles: Aqueous hydrolysis followed by surfactant exchange,” *Chem. Mater.* **16**, 118 (2004)

D. Gourdon, M. Yasa, A.R. Godfrey, Y. Li, C.R. **Safinya**, J. **Israelachvili**, “Mechanical and structural properties of BaCrO₄ nanorod films under confinement and shear,” *Advanced Functional Materials* **14**, 238 (2004)

R.P. Haggerty, R. **Seshadri**, “Oxygen stoichiometry, crystal structure, and magnetism in La_{0.5}Sr_{0.5}CoO_{3- δ} ,” *J. Phys. Condens. Matter* **16**, 6477 (2004)

P.J. Hansen, L. Shen, Y. Wu, A. Stonas, Y. Terao, S. Heikman, D. Buttari, T.R. Taylor, S.P. DenBaars, U.K. Mishra, R.A. York, J.S. **Speck**, “AlGaN/GaN metal-oxide-semiconductor heterostructure field-effect transistors using barium strontium titanate,” *Am. Vac. Soc., B* **22**, 2479 (2004)

A. Hexemer, E. Sivaniah, E.J. **Kramer**, M. Xiang, X. Li, D.A. Fischer, C.K. Ober, “Managing polymer surface structure using surface active block copolymers in block copolymer mixtures,” *J. Polymer Science - Polymer Physics* **42**, 411 (2004)

L.S. Hirst, C.R. **Safinya**, “Skin layer at the actin-gel surface: Quenched protein membranes with flat, crumpled and tubular morphologies,” *Physical Review Letters* **93**, 018101-1-4 (2004)

E. Horvath-Bordon, E. Kroke, I. Svoboda, H. Fuess, R. Riedel, S. Neeraj, A.K. **Cheetham**, “Alkalicyamelurates, M-3[C₆N₇O₃]center dot xH₂O, M = Li, Na, K, Rb, Cs: UV-luminescent and thermally very stable ionic tri-s-triazine derivatives,” *J. Chem. Soc., Dalton Trans.*, 3900 (2004)

D.H. Jeong, M. **Moskovits**, “Engineering nanostructures for giant optical fields,” *Chem. Phys., Lett.* **397**, 91 (2004)

D.H. Jeong, Y.X. Zhang, M. **Moskovits**, “Polarized surface enhanced Raman scattering from aligned silver nanowire rafts,” *J. Phys. Chem. B* **108**, 12724 (2004)

T.M. Katona, P. Cantu, S. Keller, Y. Wu, J.S. **Speck**, S.P. DenBaars “Maskless lateral epitaxial overgrowth of high-aluminum content $\text{Al}_x\text{Ga}_{1-x}\text{N}$,” *Appl. Phys. Lett.* **84**, 5025 (2004)

T.M. Katona, M.D. Craven, J.S. **Speck**, S.P. DenBaars, “Cathodoluminescence study of deep ultraviolet quantum wells grown on maskless laterally epitaxial overgrown AlGaN,” *Appl. Phys. Lett.* **85**, 1350 (2004)

A. Kolmakov, M. **Moskovits**, “Chemical sensing and catalysis by one-dimensional metal-oxide nanostructures,” *Annu. Rev. Mater. Res.* **34**, 151 (2004)

A.K. Kundu, K. Ramesha, R. **Seshadri**, C.N.R. Rao, “Magnetic and electron transport properties of the rare-earth cobaltates, $\text{La}_{0.7-x}\text{Ln}_x\text{Ca}_{0.3}\text{CoO}_3$ ($\text{Ln} = \text{Pr}, \text{Nd}, \text{Gd}$ and Dy): A case of phase separation,” *J. Phys. Condens. Matter* **16**, 7955 (2004)

S.H. Lee, F.S. Diana, A. Badolato, P.M. Petroff, E.J. **Kramer**, “Self-assembling nanoparticles into holographic nanopatterns,” *J. Appl. Phys.* **95**, 5922 (2004)

M. McLaurin, B. Haskell, S. Nakamura, J.S. **Speck**, “Gallium adsorption onto gallium nitride surfaces,” *J. of Appl. Phys.* **96**, 327 (2004)

B. Moran, F. Wu, A.E. Romanov, U.K. Mishra, S.P. DenBaars, J.S. **Speck** “Structural and morphological evolution of GaN grown by metalorganic chemical vapor deposition on SiC substrates using an AlN initial layer,” *J. of Crystal Growth* **273**, 38 (2004)

M. **Moskovits**, D.H. Jeong, T. Livneh, Y. Wu, G.D. **Stucky**, “Engineering nanostructures for single-molecule surface-enhanced Raman spectroscopy,” *Proceedings of SPIE Nanosensing: Materials and Devices*, M. Saif Islam, Achyut K. Dutta, Eds., 5593 (2004)

J.M. Mwabora, T. Lindgren, E. Avendaño, T.F. Jaramillo, J. Lu, S.-E. Lindquist, C. G. Grandqvist, “Structure, composition, and morphology of photoelectrochemically active $\text{TiO}_2\text{-xN}_x$ thin films deposited by reactive DC magnetron sputtering,” *J. Phys. Chem. B.* **108**, 20193 (2004)

C. Poblenz, P. Waltereit, S. Rajan, S. Heikman, U. Mishra, J.S. Speck, "Effect of carbon doping on buffer leakage in AlGaN/GaN high electron mobility transistors," *J. Vac. Sci. Technol. B* **22**, 1145 (2004)

E. Reister, G.H. Fredrickson, "Nanoparticles in a diblock copolymer background: The potential of mean force," *Macromolecules* **37** 4718 (2004)

T. Schaedler, S. Girma, A.S. Gandhi, S. Sampath, C.G. Levi, "Metastable phase evolution in TiO₂-YO₃/2-ZrO₂," *MRS Fall Conf. Proc.*, 835 (2004)

K. Schofield, "Let them eat fish: hold the mercury," *Chem. Phys. Lett.* **386**, 65 (2004)

B. Schwenzer, J. Hu, R. Seshadri, S. Keller, S.P. DenBaars, U.K. Mishra, "Gallium nitride powders from ammonolysis: Influence of reaction parameters on structure and properties," *Chem. Mater.* **16**, 5088 (2004)

B. Schwenzer, L. Loeffler, R. Seshadri, S. Keller, F.F. Lange, S.P. DenBaars, U.K. Mishra, "Preparation of indium nitride micro- and nanostructures by ammonolysis of indium oxide," *J. Mater. Chem.* **14**, 637 (2004)

R. Seemann, E.J. Kramer, F.F. Lange, S. Herminghaus, "Nanostructuring of polymers: Precise channel stamping by optimizing wetting properties," *New J. Phys.* **6**, 111 (2004)

D.S. Seferos, D.A. Banach, N.A. Alcantar, J.N. Israelachvili, G.C. Bazan, "Bis(thioacetyl)oligophenylenevinylene chromophores from thioanisol precursors," *J. Organic Chem.* **69**, 1110 (2004)

S.W. Sides, G.H. Fredrickson, "Continuous polydispersity in a self-consistent field theory for block copolymers," *J. Chem. Phys.* **121**, 4974 (2004)

J. Tang, H. Birkedal, E.W. McFarland, G.D. Stucky, "Assembly of CdSe/CdS quantum dots on Au surfaces for photoreception," *Materials Research Society Symposium Proceedings* 796 (Critical Interfacial Issues in Thin-Film Optoelectronic and EnergyConversion Devices, Editors: David S. Ginley, Sue A. Carter, Michael Gratzel, Robert W. Birkmire), paper no. V3.2, 145 (2004)

P. Waltereit, C. Poblenz, S. Rajan, F. Wu, U.K. Mishra, J.S. **Speck**, "Structural properties of GaN buffer layers on 4H-SiC(0001) grown by plasma-assisted molecular beam epitaxy for high electron mobility transistors," *Jpn. J. Appl. Phys.* **43**, 1520 (2004)

J. Wang, G.D. **Stucky**, "Materials for multibit-per-site optical data storage," *Advanced Functional Materials* **14**, 409 (2004)

J. Wang, C.-K. Tsung, W. Hong, Y. Wu, J. Tang, G.D. **Stucky**, "Synthesis of mesoporous silica nanofibers with controlled pore architectures," *Chem. Mater.* **16**, 5169 (2004)

Y. Wu, G. Cheng, K. Katsov, S.W. Sides, J. Wang, J. Tang, G.H. **Fredrickson**, M. **Moskovits**, G.D. **Stucky**, "Composite mesostructures by nano-confinement," *Nature Materials* **3**, 816 (2004)

Y. Wu, A. Hanlon, J.F. Kaeding, R. Sharma, P.T. Fini, S. Nakamura, J.S. **Speck** "Effect of nitridation on polarity, microstructure, and morphology of AlN films," *Appl. Phys. Lett.* **84**, 912 (2004)

Y. Yang, W.J. Zhu, T.P. Ma, S. **Stemmer**, "High-temperature phase stability of hafnium aluminate films for alternative gate dielectrics," *J. Appl. Phys.* **95**, 3772 (2004)

M. Yasa, Y. Li, C.B. Mammen, J. Als-Nielsen, J. Hoszowska, C. Mocuta, A. Freund, "Double focusing of hard x-rays using combined multilayer and Bragg-Fresnel optics," *Appl. Phys. Lett.* **84**, 4744 (2004)

L. Zhang, E. Hu, "Lasing emission of InGaAs quantum dot microdisk diodes," *IEEE Photonics Tech. Lett.* **16**, 6 (2004)

Y. Zhang, A. Kolmakov, S. Chretien, H. Metiu, M. **Moskovits**, "Control of catalytic reactions at the surface of a metal oxide nanowire by manipulating electron density inside it," *Nanoletters* **4**, 403 (2004)

Y. Zhang, A. Kolmakov, Y. Lilach, M. **Moskovits**, "Electronic control of chemistry and catalysis at the surface of an individual tin oxide nanowire," *J. Phys. Chem.*, in press (2004)

Patents

J.H. Harrel, M.S. Wong, P.K. **Hansma**, D.E. **Morse**, G.D. **Stucky**, "Self-healing organosiloxane materials containing reversible and energy-dispersive crosslinking domains," U. S. Patent No. 6,783,709 (August 31, 2004)

D.E. **Morse**, K.M. Roth, "Low-cost method for the fabrication of nanostructured semiconducting, photoconductive, photovoltaic, optoelectronic and electrical battery thin films and materials at low temperature, with no molecular template and no organic contaminants," Provisional Patent granted 10/16/04.

G.D. **Stucky**, B.F. **Chmelka**, G. Wirnsberger, B.J. Scott, N.A. Melosh, H.C. Huang, P. Yang, "Inorganic/block copolymer-dye composites and dye-doped mesoporous materials for optical and sensing applications," patent pending. UC Case No. 2001-009, Application Number: 10/002,968

P.Yang, T. Deng, G.M. Whitesides, G.D. **Stucky**, D. Zhao, B.F. **Chmelka**, D. **Pine**, P. Feng, "Method for forming hierarchically ordered porous oxides," U. S. Patent No. 6,716,378 (April 6, 2004)