Curriculum Vitae

of

Dr. Gerard Caneba

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GUIDING PRINCIPLE: To always innovate and discover

EDUCATION

Massachusetts Institute of Technology, Summer Professional Program in "Microsystems: Mechanical, Biochemical, Optical", July 24-28, 2000.

University of California, Berkeley; Chemical Engineering, Ph.D. (May, 1985)
Thesis Advisor: Prof. David S. Soong (now David S. Soane)

University of California, Berkeley; Chemical Engineering, M.S. (Dec., 1982)
Thesis Advisors: Prof. David S. Soong (now David S. Soane) and Prof. John M. Prausnitz

University of the Philippines, Quezon City, Philippines; Chemical Engineering, B.S. (Mar., 1979)

EXPERIENCE

8/98-present: Professor, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931
12/08-present: Adjunct Professor, Materials Science and Engineering Department, Michigan Technological University, Houghton, MI 49931
8/07-present: Director, Center for Environmentally Benign Functional Materials, Michigan Technological University, Houghton, MI 49931
9/95-8/98: Associate Professor, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931
2/06-7/07: Associate Director, Center for Environmentally Benign Functional Materials, Michigan Technological University, Houghton, MI 49931
6/04-8/04: Summer Faculty Fellow, Johnson Space Center, NASA, Houston, TX
6/03-8/03: Summer Faculty Fellow, Johnson Space Center, NASA, Houston, TX
9/00-8/01: Associate Chair, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931
6/01-8/01: Summer Faculty Fellow, Material Science Division, Argonne National Laboratory, Argonne, IL 60439-4845
3/99-present: Visiting Research Fellow, Institute of Materials Processing, Michigan Technological University, Houghton, MI 49931
9/86-8/05: Adjunct Faculty Member, Michigan Molecular Institute, Midland, Michigan

9/90-8/95: Assistant Professor, Department of Chemical Engineering, Michigan Technological University, Houghton, MI 49931
7/85-8/90: Visiting Assistant Professor of Chemical Engineering, Chemistry and Chemical Engineering Department, Michigan Technological University, Houghton, MI 49931
3/85-6/85: Post-Doctoral Associate, Department of Chemical Engineering, University of California, Berkeley, CA 94720
1/84-2/85: Graduate Student/Research Assistant, Center for Advanced Materials, Lawrence Berkeley Laboratory, Berkeley, CA 94720
9/80-12/83: Research/Teaching Assistant, Department of Chemical Engineering, University of California, Berkeley, CA 94720
11/78-8/80: Associate Research Engineer, Industrial Research Center, University of the Philippines, Quezon City, Philippines
11/78-8/80: Instructor, Department of Engineering Science, University of the Philippines, Quezon City, Philippines
11/77-3/78: Student Assistant, Department of Chemical Engineering, University of the Philippines, Quezon City, Philippines

AWARDS/HONORS

Winner - Best Academic Poster, Sponsored by ACS Rubber Division, April, 1985
Filtration Society Fellowship, 1983-84
UNESCO Fellowship, 1980-82
Topnotcher - Chemical Engineering Professional Licensure Examination in the Philippines, 1979
Who's Who in America (Science and Engineering), 1994
Summer Faculty Fellowship – Argonne National Laboratory, 2001
Work in Nanotechnology selected by the Center for Nanoscale Materials of Argonne National Laboratory was presented to the *DOE Nanoscale Science Research Centers Workshop "**Enabling the Nanoscience Revolution**"* in Washington, D.C. on Feb. 26-28, 2003, which was attended by government, academic, and industry leaders
Arthur and Dorothy Sigel Lecture Series Speaker, Department of Chemical Engineering, Michigan Technological University, October 31, 2003.
Summer Faculty Fellowship - NASA Johnson Space Center, 2003
Summer Faculty Fellowship – NASA Johnson Space Center, 2004

PROFESSIONAL ASSOCIATIONS

American Chemical Society (ACS)
American Institute of Chemical Engineers (AIChE)
American Society of Engineering Educators (ASEE)
Society of Plastics Engineers (SPE)
Sigma Xi (ΣX)

REFEREED JOURNAL PUBLICATIONS

G.T. Caneba, D.S. Soong, and J.M. Prausnitz, "Diffusion and Sorption of Cyclohexane Vapor in Styrene-Butadiene Copolymers," *J. Macromol. Sci. - Phys.*, B22 (1983-84) 693.

G.T. Caneba and D.S. Soong, "Polymer Membrane Formation through the Thermal Inversion Process. 1. Experimental Study of Membrane Structure Formation," *Macromolecules*, 18, 2538 (1985).

G.T. Caneba and D.S. Soong, "Polymer Membrane Formation through the Thermal Inversion Process. 2. Mathematical Modeling of Membrane Structure Formation," *Macromolecules*, 18, 2545 (1985).

G.T. Caneba and D.S. Soong, "Determination of Binodal Compositions for Polymer Solutions using Pulsed-NMR Techniques," Macromolecules, 19, 369 (1986).

G.T. Caneba and M.J. Crossey, "Chaos in Periodically Perturbed Reactors," *Chemical Engineering Communications*, 51, 1 (1987).

G.T. Caneba and B. Densch, "Intermittency in Dynamic Nonisothermal CSTR," *A.I.Ch.E. Journal*, 34, 333 (1988).

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G.T. Caneba, "Analysis of Polymer Membrane Formation Through Spinodal Decomposition", *Polymer Engineering and Science*, 31, 879 (1991).

A. Laxminarayan and G.T. Caneba, "Analysis of Polymer Membrane Formation Through Spinodal Decomposition 2. Effect of Entropic Contribution", *Polymer Engineering and Science*, 31, 1597 (1991).

G. Caneba, "Free-Radical Retrograde-Precipitation Polymerization Process", *Advances in Polymer Technology*, 11, 277 (1992).

Y.-L. Chen, K. Solc, and G.T. Caneba, "Analysis of Polymer Membrane Formation Through Spinodal Decomposition 3. Two-Dimensional Simulations of Early-Stage Behavior", *Polymer Engineering and Science*, 33, 1033 (1993).

B.-H. Liang, L. Mott, S.M. Shaler, and G.T. Caneba, "Properties of Transfer-Molded Wood-Fiber/Polystyrene Composites", *Wood and Wood Fiber Science*, 26(3), 382 (1994).

H.-F. Guo, A. Laxminarayan, G.T. Caneba, and K. Solc, "Morphological Studies of Late-Stage Spinodal Decomposition in Polystyrene-Cyclohexanol System, *J. Appl. Polym. Sci*., 55, 753 (1995).

G.T. Caneba and R. Saxena, "Analysis of Polymer Membrane Formation through Spinodal Decomposition: 4. Computer Simulation of Early-Stage Coarsening", *Polymer Engineering and Science*, 36, 288 (1996).

A. Aggarwal, R. Saxena, B. Wang, and G.T. Caneba, "Studies of the Polymerization of Methacrylic Acid via Free-Radical Retrograde-Precipitation Polymerization Process", *Journal of Applied Polymer Science*, 62, 2039 (1996).

B. Wang, Y. Dar, L. Shi, and G.T. Caneba, "Polymerization Control Through the Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", *Journal of Applied Polymer Science*, 71, 761 (1999).

Y. Cai, D. Gardner, and G.T. Caneba, "Surface Properties of Silicone-Containing Block-

Graft Copolymer/Polystyrene Systems", *Journal of Adhesion Science and Technology*, 13, 1017 (1999).

M.-L. Kosonen, B. Wang, G.T. Caneba, D.J. Gardner, and T. Rials, "Polystyrene-Wood Fiber Composites and Hydrophobic Coatings from Water-Soluble Hydrophilic-Hydrophobic Block Copolymers", *Clean Products and Processes*, 2, 117 (2000).

G.T. Caneba and B. Wang, "Low VOC Latex Paints from a Precipitation Polymerization Process", *Clean Products and Processes*, 3, 55 (2001).

Y. Dar and G.T. Caneba, "Transport Phenomena Aspects of the Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", *Chemical Engineering Communications,* 189, 571 (2002).

R. Saxena, L. Shi, and G.T. Caneba, "Studies of Spinodal Decomposition in a Ternary Polymer-Solvent-Nonsolvent System", *Polymer Engineering and Science,* 42, 1019 (2002).

G.T. Caneba, Y. Zhao, and Y. Dar, "Amphiphilic Styrene-Acrylic Acid Copolymers from Free-Radical Retrograde-Precipitation Polymerization (FRRPP)", *ACS Polymer Preprints*, 43(2) 156 (2002).

G.T. Caneba, and J.E. Axland, "Vinyl Acetate-Acrylic Acid-based Copolymers for Enhanced Oil Recovery", *The Journal of Minerals and Materials Characterization and Engineering*, 1(2), 97 (2002).

G.T. Caneba and L. Shi, "Lower Critical Solution Temperature of Polymer-Small Molecule Systems: A Review", in: Phase Separation in Polymer Solutions and Blends, P.K. Chan (Ed.), *Research Signpost*, ISBN #81-7736-097-3, Chap. 4, pp. 63-104 (2002).

V. Tirumala, Y. Dar, H.-H. Wang, D. Mancini, and G.T. Caneba, "Nanopolymer Particles from a Controlled Polymerization Process", *Advances in Polymer Technology*, 22, 126 (2003).

G.T. Caneba, Y. Zhao, and Y. Dar, "Amphiphilic Styrene-Acrylic Acid Copolymers from the Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", *J. Appl. Polym. Sci.*, 89(2), 426 (2003).

Y.L. Dar and G.T. Caneba, "Free-Radical Retrograde-Precipitation Polymerization: Mathematical Modeling of Styrene Polymerization in Diethyl Ether", *Chem. Eng. Commun.*, 191, 1634 (2004).

G.T. Caneba and J. Axland, "Electrical and Thermal Coatings from a Single-Walled Carbon Nanotube (SWCNT)/Polymer Composite", *Journal of Minerals and Materials Characterization and Engineering,* 3(2), 73 (2004).

V.R. Tirumala, R. Divan, D.C. Mancini, and G.T. Caneba, "Fabrication of High Aspect Ratio Hydrogel Microstructures", *Microsystems Technologies Journal*, 11(4-5), 347-352 (2005).

J.-Y. Hwang, X. Huang, S. Qu, Y. Wang, S. Shi, and G. Caneba, "Iron Oxide Reduction with Conventional and Microwave Heating under CO2 and H2 Atmospheres", E.P.D. Congress 2006, Edited by: S.M. Howard, R.I. Stephens, C.J. Newman, J.-Y. J. Hwang, A.M. Gokhale, and C.K. Belt, *T.M.S. (The Minerals, Metals & Materials Society)*, 2006.

K.K. Mohanty and G.T. Caneba, "Enhanced Oil Recovery – A Review", *Encyclopedia of Chemical Processing*, 2006.

G.T. Caneba, "Reactive Extrusion", *Encyclopedia of Chemical Processing,* 2006.

Y.L. Dar, Farwaha, R., and G.T. Caneba, "Free-Radical Polymerization", *Encyclopedia of Chemical Processing,* 2006.

Tirumala, V.R., Caneba, G.T., Mancini, D.C., and Wang, H.H., "Microfabrication by X-Ray Induced Polymerization above the Lower Critical Solution Temperature", *Journal of Applied Polymer Science*, 102(1), 429 (2006).

Y. Zhao, Y. Dar, and G.T. Caneba, "Mathematical Modeling of Styrene-Acrylic Acid Copolymerization through the Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", invited submission in honor of Prof. Bruce Nauman to *Industrial and Engineering Research Chemistry,* 47, 3568 (2008).

G.T. Caneba, M. Renier, and B. Ott, "Towards the Development of CO_2 Separation Membranes", *Journal of Minerals and Materials Characterization and Engineering,* 7(2), 175 (2008).

G.T. Caneba, Z. Xu, and Y.L. Dar, "Free-Radical Retrograde-Precipitation Copolymerization of Vinyl Acetate and Acrylic Acid", *Journal of applied Polymer Science*, 113, 3872-3882 (2009).

Tasdemir, M., Biltekin, H., and Caneba, G.T., "Investigation of Properties of PE & PP /Wood Flour Polymer Composites", *Journal of Applied Polymer Science,*112, 3095-3102 (2009).

Tasdemir, M., Topsakaloglu, M., and Caneba, G.T.., "Properties of Dynamically Cured EPDM/PP Blends: Effect of Curing Agent", submitted to *Journal of Applied Polymer Science*, December, 2007.

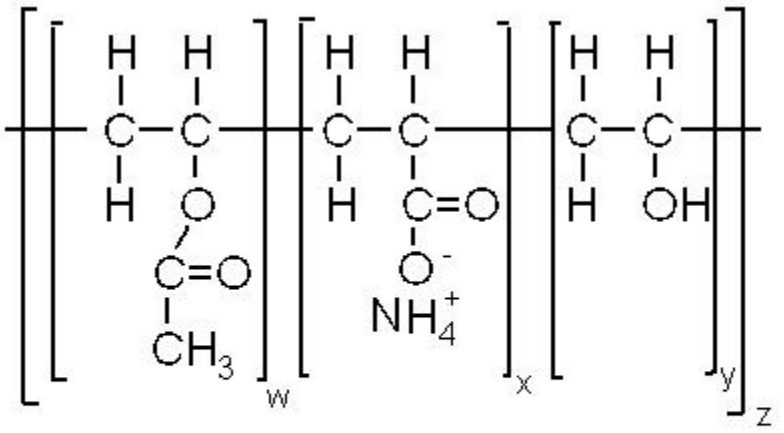
G.T. Caneba, "Nanoporous Structure and Enhanced Thermal Properties of a Carbon Nanotube/Polyimide Composite", *Journal of Minerals and Materials Characterization and Engineering,* 8, 15-24 (2009).

CAS REGISTRY

CAS Registry # [903900-50-5]

1. Type of polymer – a reduced regulatory requirement (RRR) polymer
2. CAS Name of polymer: 2-Propenoic acid with ethenyl acetate, hydrolyzed
3. Common Name: Partially hydrolyzed vinyl acetate-ammonium acrylate copolymer

4. Molecular Structure:



PATENTS

G.T. Caneba and D.S. Soane (Soong), "A Thermal Inversion Process for the Preparation of Membranes," U.S. Patent No. 4,659,470, April, 1987.

G.T. Caneba, "Free-Radical Retrograde-Precipitation Polymerization Process," U.S. Patent No. 5,173,551, December 22, 1992.

G.T. Caneba and Y.L. Dar, "Free-Radical Retrograde Precipitation Copolymers and Process for making the Same", submitted to *U.S. Patent and Trademark Office*, January, 2002, Publication 2003/0153708.

G.T. Caneba and Y.L. Dar, "Free-Radical Retrograde Precipitation Copolymers and Process for making the Same", foreign submission to the *Patent Cooperation Treaty*, January, 2003, Publication WO 03/059974.

V.R. Tirumala, G.T. Caneba, D.C. Mancini, and H.H. Wang, "Spatially Controlled *In Situ* Synthesis of Polymers", *U.S. Patent No.* 6,869,983, March 22, 2005.

G.T. Caneba,"Multifunctional Multipolymeric Surfactants for Oil-Bitumen Recovery", U.S. patent and PCT applications, February 9, 2007.

G.T. Caneba, "Formation of Radicalized Vinylidene Chloride Copolymer Particulates and Related Materials", provisional U.S. patent application, June, 2007.

INVENTION DISCLOSURES

Submitted to Michigan Technological University:

"Production of Micron and Submicron-sized Polymer Spheres with Narrow Particle Size Distribution", July 18, 1985.

"Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", April 22, 1988.

"Polystyrene/Poly(methyl methacrylate) Diblock Copolymer System as Compatibilizer to Polystyrene/Polyvinylchloride Blends, January 21, 1991.

"Formation of Water-Blown Polymer Foams", June 3, 1992.

"Formation of Copper-Filled Foam Rubber Pads", June 3, 1992
"Preparation of Environmentally-Friendly Coatings from …", March 11, 1994.
"Reactive Processing of Polymer Blends via Controlled Degradation and Reformation", January 4, 1996.
"Polystyrene-based Copolymers from the FRRPP Process", December 11, 1996.
"Silicone-Organic Polymers from the FRRPP Process", April 14, 1997.
"Industry-Friendly FRRPP Process", March 11, 1998.
"Functional Polymer Nanostructures from the FRRPP Process", June 15, 1998.
"Free-Radical Precipitation Copolymers and Process for Making the Same", November 12, 2001.
"Stable Poly(vinylidene chloride)-based Radical Particulates", December 8, 2006.
"Block copolymers from vinylidene chloride monomer", December 8, 2006.

Submitted to Argonne National Laboratory:
"Spatially Controlled, *In Situ* Synthesis of Polymers", ANL Case# ANL-IN-02-059, June 21, 2002.

Submitted to NASA-Johnson Space Center:
"Efficient Dispersion of Carbon Nanotubes", submitted to Michigan Technological University and NASA-Johnson Space Center, February-March, 2005.

WEBSITES/BOUND MATERIALS

G.T. Caneba, "Free-Radical Retrograde-Precipitation Polymerization (FRRPP): Novel Concept, Processes, Materials, and Energy Aspects", monograph to be published by Springer-Verlag (can be verified through google searches), December 2009.
Center for Environmentally Benign Functional Materials (CEBFM) website – coming soon.
G. Caneba, "Free-Radical Retrograde-Precipitation Polymerization Process", a website at www.frrpp.chem.mtu.edu, containing a 200-page material about the concepts and applications of the FRRPP process, 1997-1998.
G. Caneba, "CM310 – Notes", a 196-page lecture material available for sale to undergraduate students in momentum and heat transfer and their unit operations, printed in Houghton, MI, versions 1995, 1996, 1997.
G. Caneba, "CM3220 - Chemical Thermodynamics Lecture Notes", a 146-page lecture material available for sale to undergraduate students in chemical thermodynamics, printed in Houghton, MI, versions 1999, 2000, 2001, 2002, and 2003.

PROCEEDINGS

M.J. Crossey and G.T. Caneba, "Chaos in Periodically Perturbed Nonisothermal and Biochemical CSTRs", Proceedings of the A.I.Ch.E. Annual Meeting, Miami, FL, November 1-6, 1992.
"Free-Radical Retrograde Precipitation Polymerization Process", Proceedings of the Society for Plastics Engineers International Conference on Polymer Additives, Miami, FL, February 2-4, 1992.

"Diffusion and Sorption of Cyclohexanol in Polystyrene Near the Phase Boundary", Proceedings of the American Institute of Chemical Engineers Annual Meeting, Miami, FL, November 1-6, 1992.

"Compatibilization of Virgin and Recycled PS/PVC Blends", Proceedings of the American Institute of Chemical Engineers Annual Meeting, Miami, FL, November 1-6, 1992.

V.R. Tirumala, G.T. Caneba, N. Moldovan, ,D. Mancini, and H._H. Wang, "Self-Organization in Synchrotron X-Ray Induced Controlled Polymerization", Proceedings of the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, Y.-L. Chen, and K. Solc, "Computer Simulation of Spinodal Decomposition in One, Two, and Three Dimensions", Proceedings of the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, "Foaming Characteristics of Vinyl Acetate-Acrylic Acid Copolymers", Proceedings of the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

Yi Zhao, Y.L. Dar, M.-L. Kosonen, and G.T. Caneba, "Influence of Relative Block Sizes of Styrene-Acrylic Acid Copolymer Coupling Agent to the Tensile Behavior of Polystyrene-Wood Composites", Proceedings of the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, Y.L. Dar, and Y. Zhao, "Vinyl Acetate-Acrylic Acid Copolymers as Coupling Agents for Wood Flour-Vinyl Composites", Proceedings of the 7th International Woodfiber-Plastic Composites Conference, Madison, WI, May 19-20, 2003.

V.R. Tirumala, R. Divan, D. Mancini, and G.T. Caneba, "Lithographically-Assisted Synthesis of High Aspect-Ratio Hydrogel Microstructures", this paper was partly presented at the Fifth International Workshop on High Aspect Ratio Miscrstructure Technology (HARMST), Monterey, CA, June 15-17, 2003.

V.R. Tirumala, D.C. Mancini, and G.T. Caneba, "Synthesis of Ultrafast Response Microgels for MEMS Applications", *Smart Structures and Materials*, SPIE Conference, 5389, 221-228 (2004).

V.R. Tirumala, D.C. Mancini, and G.T. Caneba, "*In Situ* Fabrication of Thermoreversible Microgels" Proceedings of the *IEEE International Conference on Intelligent Sensing and Information Processing*, M. Palaniswami, C. Chandrasekhar, G.K. Vengayamoorthy, S. Mohan, and M.K. Ghantasala (Eds.), pp. 196-200, Chennai, India, January 4-7, 2004.

V.R. Tirumala, L. Guo, G.T. Caneba, D.C. Mancini, P. Thiyagarajan, and J.G. Barker, "USANS Investigation of Poly(N-isopropylacrylamide) Gels prepared from Synchrotron-Radiation-Induced Polymerization on a Retrograde-Precipitation Environment", Proceedings of the *American Conference on Neutron Scattering*, June 6-10, 2004, College Park, Maryland.

G.T. Caneba, E.R. Fisher, and D. Caspary, "Poly(dimethyl siloxane) Experiments for the Unit Operations Laboratory", *Proceedings of the A.I.Ch.E. Annual Meeting*, Session 313b, Fall, 2004.

Y.L. Dar, V.R. Tirumala, G.T. Caneba, and D.C. Mancini, "Novel Sparse-Matrix Representations for Free-Radical Polymerization Simulations", *Proceedings of*

the A.I.Ch.E. Annual Meeting, Session 353f, Fall, 2004.

MANUSCRIPTS/REPORTS

G.T. Caneba and D.S. Soong, "Effects of Phase Inversion Casting Conditions on the Structure of Cellulose Triacetate Membranes," manuscript available, March, 1985.

G.T. Caneba and S.N. Patil, "Microwave Curing of Shell Cores," a report submitted to Grede Foundry, Inc., December 15, 1988.

G.T. Caneba, "Formation of a Thermally Conductive Rubber Foam," a letter-report submitted to TE Technology, Inc., August 23, 1990.

A. Aggarwal and G.T. Caneba, "Environmental Aspects of Polymers", a report submitted to the EPA-sponsored Center of Excellence in Clean Industrial Manufacturing and Treatment Technologies, December 1, 1992.

R.F. Kiesel, G.T. Caneba, "Polymer Degradation and Reformation for High Performance Rubber Products", a report on preliminary work in reactive processing, December, 1995.

P. Schlom and G.T. Caneba, "Process Development of the FRRPP Process", bimonthly reports (8) submitted to National Starch and Chemical Co., June 15, 1998 – August 15, 1999.

Y. Dar and G.T. Caneba, "Process Development of the FRRPP Process", bimonthly report submitted to National Starch and Chemical Co., October 15, 1999.

Y. Dar and G.T. Caneba, "Process Development of the FRRPP Process", bimonthly report submitted to National Starch and Chemical Co., December 15, 1999.

P. Schlom and G.T. Caneba, "Process Development of the FRRPP Process", First annual report submitted to the ICI – Strategic Research Fund, December, 1999.

Y. Dar and G.T. Caneba, "Process Development of the FRRPP Process", bimonthly reports (5) submitted to National Starch and Chemical Co., February 15, 2000 – October 15, 2000.

G.T. Caneba, "National Starch/ICI-SRF Project: Final Report", submitted to National Starch and Chemical Co., April, 2001.

V.R. Tirumala, G.T. Caneba, N.A. Moldovan, D.C. Mancini, and H.H. Wang, "Controlled Macromolecular Synthesis from a Novel Polymerization Process", *APS Activity Report*, report to the Advanced Photon Source of Argonne National Laboratory, in press.

G.T. Caneba and S. Gibelyou, "Carbon Nanotubes for Fuel Cells in Space", submitted to NASA-Johnson Space Center, August 11, 2003.

G.T. Caneba, "Studies of Carbon Nanotubes", submitted to NASA-Johnson Space Center, August, 2004.

V.R. Tirumala, G.T. Caneba, D.C. Mancini, and H.H. Wang, "Controlling Chain Growth by polymerizing in a Quiescent Environment above the LCST", manuscript draft available.

G.T. Caneba, "Carbon Nanotube-Polymer Dispersions for Space Applications", final report to NASA-Johnson Space Center, May, 2005.

G. Subhash, G. Caneba, and D. Shonnard, "MTU Efforts for Phase I Rebar Project", monthly (15), quarterly (5), and final (1) reports submitted to Raytheon Missile

Systems, Tucson, Arizona.

MANUSCRIPTS UNDER PREPARATION

G.T. Caneba and Y.L. Dar, “Emulsion Free-Radical Retrograde-Precipitation Polymerization (EFRRPP) and Related Topics”, monograph manuscript to be submitted to Springer-Verlag, October, 2010.

M. Tasdemir, G. Caneba, B. Wang, and B. Ott, “CO_2 Incorporation in Filled Thermoplastics”.

B.A.Ott and G.T. Caneba, “Statistical Associating Fluid Theory (SAFT)-based Calculations of CO_2 in Polystyrene”.

Y.L. Dar, G.T. Caneba, and P. Schlom, “Formation of Styrene-Based Block Copolymer Emulsions via Free-Radical Retrograde-Precipitation Process”.

G.T. Caneba, “Formation of EMI Protection Films from SWNT onto Lexan™”, submitted to NASA-Johnson Space Center for release.

G.T. Caneba, “Formation of SWNT-Polyimide Nanoporous and Film Composites”, submitted to NASA-Johnson Space Center for release.

MAGAZINE/NEWSPAPER ARTICLES WRITTEN ABOUT SCHOLARLY WORK

"Block Copolymers by Free-Radical Process," under Science and Technology Concentrates, Chemical Engineering News, September 23, 1991.

"PS/PVC Blend from Michigan Tech is Designed for Recycling", Plastics & Environment, McGraw-Hill, Inc., New York, N.Y., November 27, 1992, p. 6.

"Good Material from Recycled Plastics", Inside R&D, November 11, 1992.

Control Magazine, an article about the FRRPP process, November, 1992.

"Two Polymers are Better than One", A.I.Ch.E. Extra - A Supplement to the Chemical Engineering Progress", December, 1992, p. 1.

"High-Tech Breakthroughs", Boardroom Reports, April 1, 1993, p. 10.

"Die Polymersynthese laBt sich verbessern: Polystyrol und Polyvinylchlorid werden zu inem neuen Polymer", Blick durch die Wirtschaft, a paragraph article published in Europe that talks about my work in formation of unique block copolymers and their use as compatibilizers, April 15, 1993.

Frankfurt Economie News, An article published in Europe about my work in linking polystyrene and polyvinylchloride using block copolymers we generated through a radical polymerization reaction, April, 1993.

"Tech Taking Stink out of a Job", Daily Mining Gazette, Houghton, MI, Dec. 27, 1994.

“Caneba: Developing an All-Purpose Polymer”, Featured article published on March 5, 2002 in the Michigan Technological University Website (http://www.mtu.edu).

PRESENTATIONS IN PROFESSIONAL MEETINGS

"Experimental Study and Mathematical Modeling of the Formation of Structured Polymer Membranes", presented at the American Institute of Chemical Engineers Annual Meeting, Chicago, Illinois, November, 1985.

"Influence of Transport and Thermodynamic Parameters in Spinodal Decomposition of Binary Polymer Solutions", presented at the American Chemical Society Great Lakes Regional Meeting, Milwaukee, June 2-4, 1986.

"Chaos in Periodically Perturbed Reactors", presented at the American Chemical Society Great Lakes Regional Meeting, Milwaukee, June 2-4, 1986.

"Intermittency in Nonisothermal CSTR", presented at the A.C.S. Fall Scientific Meeting, Midland, Michigan, October 31, 1987.

"Polystyrene/Poly(methyl methacrylate) Diblock Copolymer System as Compatibilizer for Polystyrene/Polyvinylchloride Blends", presented (as poster) at the American Institute of Chemical Engineers Annual Meeting, Chicago, Illinois, November 11-16, 1990.

“Microwave Heating of Solids", presented at the Annual A.I.Ch.E. National Meeting, Chicago, Illinois, November 11-16, 1990.

"Phenomenological Analysis of Phase Transitions in Polymer Systems", presented at the Annual A.I.Ch.E. National Meeting, Chicago, Illinois, November 11-16, 1990.

"A Thermodynamically Controlled Free-Radical Polymerization Process", presented (as poster) at the Engineering Foundation Symposium in Polymer Reaction Engineering, Santa Barbara, CA, March 10-15, 1991.

"Chaos in Periodically Perturbed Nonisothermal and Biochemical CSTRs", presented at the Annual A.I.Ch.E. National Meeting, Miami, FL, November 1-6, 1992.

"Free-Radical Retrograde Precipitation Polymerization Process", invited lecture at the Society for Plastics Engineers International Conference on Polymer Additives, Miami, FL, February 2-4, 1992.

"Process Features of the Free-Radical Retrograde Precipitation Polymerization (FRRPP) Process", presented at the American Institute of Chemical Engineers Annual Meeting, Miami, FL, November 1-6,1992.

"Diffusion and Sorption of Cyclohexanol in Polystyrene Near the Phase Boundary", presented at the American Institute of Chemical Engineers Annual Meeting, Miami, FL, November 1-6, 1992.

"Compatibilization of Virgin and Recycled PS/PVC Blends", presented at the American Institute of Chemical Engineers Annual Meeting, Miami, FL, November 1-6, 1992.

"Studies of the Polymerization of Methacrylic Acid via Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", presented (as poster) at the Engineering Foundation Conference in Polymer Reaction Engineering, St. Augustine, Florida, February 13-18, 1994.

“Precipitation Polymerization Studies", presented at the Annual Meeting of the American Institute of Chemical Engineers, Chicago, IL, November 14, 1996.

"Polymer Reactive Processing by Partial Degradation/Reformation", presented (as poster) at the Annual Meeting of the American Institute of Chemical Engineers, Chicago, IL, November 13, 1996.

"The Mechanism of the Free-Radical Retrograde-Precipitation Polymerization (FRRPP) Process", presented at the American Institute of Chemical Engineers Annual Meeting, Chicago, IL, November 11-14, 1996.

"FRRPP Process for No-VOC Coatings", invited presentation to the Engineering Foundation Conference, San Diego, CA, June 1-5, 1997.

"Transport Phenomena Influences in a Chain Polymerization System", presented at the American Institute of Chemical Engineers Annual Meeting, October 31 – November 5, 1999, Dallas, TX.

"Developments in the FRRPP Process", presented at the American Institute of Chemical Engineers Annual Meeting, October 31 – November 5, 1999, Dallas, TX.

"Hydrophilic-Hydrophobic Block Copolymers in Environmentally Responsible Wood-Polymer Systems", presented at the American Institute of Chemical Engineers Annual Meeting, October 31 – November 5, 1999, Dallas, TX.

"Sorption Method for Measurement of Spinodal Curve in Polymer-Solvent Systems", presented at the American Institute of Chemical Engineers Annual Meeting, October 31 – November 5, 1999, Dallas, TX.

"Nanopolymer Formation from a Surfactant-Free Controlled Polymerization Process", presented as a poster at the 2000 Foresight Conference on Molecular Nanotechnology, Bethesda, MD, November 3, 2000.

"Nanoscience and Nanotechnology from a Controlled Polymerization Process", poster presentation to the Planning Workshop of the Center for Nanoscale Materials at Argonne National Laboratory, October 22, 2001.

G.T. Caneba, Y. Zhao, and Y.L. Dar, "Amphiphilic Styrene-Acrylic Acid Copolymers from Free Radical Retrograde Precipitation Polymerization (FRRPP)", presented as poster at the Symposium on Controlled Radical Polymerization, ASC Annual Meeting, Boston, MA, August 20, 2002.

V.R. Tirumala, G.T. Caneba, N. Moldovan, ,D. Mancini, and H.H. Wang, "Self-Organization in Synchrotron X-Ray Induced Controlled Polymerization", presented at the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, Y.-L. Chen, and K. Solc, "Computer Simulation of Spinodal Decomposition in One, Two, and Three Dimensions", presented at the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, "Foaming Characteristics of Vinyl Acetate-Acrylic Acid Copolymers", presented at the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

Yi Zhao, Y.L. Dar, M.-L. Kosonen, and G.T. Caneba, "Influence of Relative Block Sizes of Styrene-Acrylic Acid Copolymer Coupling Agent to the Tensile Behavior of Polystyrene-Wood Composites", presented at the A.I.Ch.E. Annual Meeting, Indianapolis, IN, November 3-8, 2002.

G.T. Caneba, Y.L. Dar, and Y. Zhao, "Vinyl Acetate-Acrylic Acid Copolymers as Coupling Agents for Wood Flour-Vinyl Composites", presented (invited) at the 7th International Woodfiber-Plastic Composites Conference, Madison, WI, May 19, 2003.

GRADUATE STUDENTS, PROFESSIONAL STAFF, FACULTY SABBATICAL AND POST-DOCS

Faculty Sabbatical (2007-2008) – Prof. Munir Tasdemir of Marmara University who is working with G. Caneba in property enhancements of polymer blend/composite systems.

Post-Docs/Visitng Scholars – Dr. Yuh-Ling Chen (1986-1989), Dr. Zhiyong Xu (1999-2000), Prof. Munir Tasdemir (Oct 2007-Aug 2008), Dr. Rajesh Tiwari (October 2009 – present)
Professional Staff - Michael Renier (Chemist, MS from Case Western Reserve Univ.)
Ph.D. Students - Bo Wang (1997), Yadunandan Dar (1999), Rahul Saxena (2001), Vijay Tirumala (2003), Yi Zhao (2004), Shaolong Qu (2004), Brian Ott (2009), Colina Dutta (Current), Hwi Yong Lee (Current)
M.S. Students - Michael Crossey(1990), Rajendra Patil (1988), Suhas Patil (1989), Anand Laxminarayan (1990), Anuj Aggarwal (1993), Srinivas Uppuluri (1994), Srinivas Kandiraju (1992), Hong-Fei Guo (1992), Dinish Bansal (1992), Marja-Leena Kosonen (2001), Linhuo Shi (1997), Rahul Saxena (1991), Richard Kiesel, Attaso Khamwichit (1998), Ratthapol Rangkupan (1999), Yuhao Cai (1997), Bo Wang (1996), Mathkar Alharthi (Current)

COURSES TAUGHT

Introduction to Polymer Science and Engineering (Undergraduate Level, lecture and laboratory)
Transport Phenomena (Graduate Level)
Unit Operations Laboratory (Undergraduate Level)
Chemical Engineering Kinetics (Undergraduate and Graduate Levels)
Numerical Analysis in Chemical Engineering (Graduate Level)
Chemical Engineering Thermodynamics (Graduate and Undergraduate Levels)
Chemical Engineering Fluid Flow and Heat Transfer (Undergraduate Level)
Polymerization Reaction Engineering (Undergraduate Level)
Stagewise Operations (Undergraduate Level)
Stoichiometry (Undergraduate Level)
Elementary Chemical Engineering (Undergraduate Level)
Perspectives on Inquiry (Freshman Undergraduate Level)
Nanoscience and Nanotechnology (Freshman Undergraduate Level)
Undergraduate Engineering Mechanics (Statics, Dynamics, Fluid Mechanics, Engineering Mathematics)
Graduate Physical Chemistry

SIGNIFICANT COMMITTEE ASSIGNMENTS AT MICHIGAN TECH

1. Chemical Engineering Faculty Search Committee Chair – 1996-97
2. Chemical Engineering Promotion and Tenure Committee Chair – 1997-98
3. Chemical Engineering Graduate Committee Chair – 2000-01
4. Chemical Engineering Executive Committee Chair – 2000-01
5. Chemical Engineering Alternate University Senate Representative, 2002-03
6. University Sabbatical Leave Committee, Fall 2004-2008
7. College of Engineering, Bachelor of Science in Engineering faculty committee, 2006-present
8. Chemical Engineering Computer Committee Chair, 2007-2008
9. University Distinguished Faculty Service Award Committee Chair, 2007-present
10. Cognate Reviewer for the MTU Sustainability Strategic Hire Initiative, 2007-2008
11. Representative to university senate: Chemical Engineering Representative, 2008-

2009; Senator-at-Large, 2009-2010
12. Administrative Policy Committee chair, 2008-present
13. Faculty Review Committee - University Grievance Committee, 2009-present
14. Graduate Program Review Committee - a committee that establishes the foundation for the assessment of graduate programs of various departments, 2009-present

PUBLIC AND PROFESSIONAL SERVICE

1. Consulting arrangements with the following:
    (a) Advanced Polymer Technology
    (b) Nelson Paints
    (c) TE Technology
    (d) U.P. Fabricating, Inc. (Unpaid)
    (e) National Starch and Chemical Co.
    (f) NASA-Johnson Space Center, in fuel cells and lightweight dosimeters (Unpaid)
    (g) Green Oak O&E LLC
2. Manuscript reviews for the following selected journals/book:
    (a) *American Institute of Chemical Engineers Journal*
    (b) *Journal of Membrane Science*
    (c) *Industrial and Engineering Chemistry - Research*
    (d) *Journal of Applied Polymer Science*
    (e) *Polymer Engineering and Science*
    (f) *Environmental Science and Technology*
    (g) *Macromolecular Theory and Simulations*
    (h) Chapter review for *ACS Books*
    (i) Book reviews for *John Wiley and Sons*
3. Proposal reviews for the following funding agencies:
    (a) National Science Foundation (single proposals and proposals with panel reviews), 1985-present
    (b) American Chemical Society-Petroleum Research Fund
    (c) Department of Energy
    (d) Research Excellence Fund (State of Michigan)
    (e) SBIR – MERRA
    (f) UDSA – CREES (single proposals and proposals with panel review)
    (g) US Civilian Research and Development Foundation (2005)
    (h) USEPA (single proposals with panel reviews) – 2006-2007
    (i) National Priorities Research Program of Qatar National Research Fund (2007-present)
    (j) Canada National Research Council (2006-2007)
    (k) Center for Nanoscale Materials (2007-present)
4. Session chair/co-chair in professional meetings:
    (a) Nonlinear Dynamics and Control of Chemical Systems – Session Chair, A.C.S. Fall Scientific Meeting, Midland, MI, October 31, 1987
    (b) Recycling, Recovery, and Treatment of Polymer Waste – Session Co-Chair, A.I.Ch.E. Annual National Meeting, Miami, FL, Fall, 1992.

(c) Reactions in Near and With Supercritical Fluids – Session Chair (Session #34), A.I.Ch.E. Annual Meeting, Salt Lake City, UT, November 5, 2007.

15. Founding faculty user of the Center for Nanoscale Materials at Argonne National Laboratory (Argonne, IL).
16. Volunteer activities in Boy Scouts of America (Adult Leader) and Copper Country Junior Hockey Association (Goalie Coach, Associate Level Certification).