

**Name:** Mark D. Soucek

**Title:** Associate Professor of Polymers Engineering

### **EDUCATION:**

B.S. Chemistry, Eastern Illinois Univ., Charleston, IL, 1983  
M.S. Organic Chemistry, Illinois State Univ., Normal, IL, 1986  
Ph.D. Inorganic Chemistry, Univ. of Texas, Austin, TX, 1990

### **PROFESSIONAL EXPERIENCE**

2001-           **Associate Professor**, Dept. of Polymers Engineering, University of Akron, Akron, OH  
44325  
1993-01       **Assistant to Associate Professor**, Dept. of Polymers & Coatings, North Dakota State  
University, Fargo, ND 58105  
1990-1993     **National Research Council Postdoctoral Fellow**, Polymeric Materials Branch,  
NASA Langley Research Center, Hampton, VA 23665

### **HONORS/AWARDS:**

John A. Gordon Award Honorable Mention "Optimization of Core-Shell Latexes" (2004)  
Radtech Innovation Award (2004)  
John A. Gordon Award Finalist "Epoxy-norbornylene Modified Inorganic/Organic Hybrid Coatings" (2003)  
John A. Gordon Award "Polyurethane/Polysiloxane Ceramer Coatings"(2000)  
Roos Award "Cycloaliphatic Epoxide Crosslinkable Core-Shell Latexes: A New Strategy for Waterborne  
Epoxide Coatings" (1999)  
National Research Council Post-Doctoral Fellow (NASA, 1991-1993)  
Welch Fellowship (University of Texas, 1987)  
Phi Kappa Psi Honor Society (University of Texas, 1986)  
 $\Delta H$  Award for Solution Calorimetry (Eastern Illinois University, 1983)

### **RESEARCH INTERESTS:**

Powder Coatings, UV-Curable Powder Coatings, Kinetic and Reaction Mechanism Studies of  
Cycloaliphatic Epoxides, Latexes Crosslinked with Cycloaliphatic Epoxides, Protective Space Coatings,  
High Solids and Water-Reducible Alkyds, UV-Curable Coatings, Inorganic/Organic Hybrid Coatings.  
Coatings from Renewable Resources. Auto-oxidative Curing Mechanism of Drying Oils, Plasma deposition  
of High Performance Coatings, Corrosion Resistant Polyurethane Coatings. Homogeneous and  
Heterogeneous Catalysis.

### **RECENT PUBLICATIONS:** (+50)

Dworak, D.P.; Soucek, M.D. (2004) "Synthesis of Cycloaliphatic Substituted Silane Monomers and  
Polysiloxanes for Photo-Curing" *Macromolecules* 37(25), 9402.

Soucek, M.D.; Johnson, A.H.; Wegner, J.M. (2004) "Ternary Evaluation of UV-Curable Seed Oil  
Inorganic/Organic Hybrid Coatings Using Experimental Design" *Prog. Org. Coat. Vol. 5(4)*, 300.

Johnson, A.J.; Wegner, J.; Soucek, M.D. (2004) "Hydrolytic Stability of Oligoesters: Comparison of Steric  
with Anchimeric Effects" *Eur. Polym. J.*, 40(12), 2773.

Zou, K; Soucek, M.D. (2004) "UV-Curable Organic-Inorganic Hybrid film Coatings Based on Epoxidized  
Cyclohexene Derivatized Linseed Oil" *Macro. Chem. Phys.*, 204(15), 2032.

Soucek, M.D.; Johnson, A.J. Meeken, L.E. (2004) "Effect of Additional Hydroxyl Functionalities on the  
Hydrolytic Stability of Oligoesters " *Macro. Chem. Phys.*, 204(1), 35.

Soucek, M.D.; Johnson, A.J. (2004) "New Intramolecular Effect Observed for Polyesters: An Anomeric  
Effect" *J. Coat. Technol. Res.*, 1(2), 111.

- Dworak, D.P.; Soucek, M.D. (2003) "Protective Space Coatings: A Ceramer Approach for Nanoscale Materials" *Prog. Org. Coat. Vol. 47*, 448.
- Zong, Z.; Soucek, M.D.; Liu, Y.; Hu, J. (2003) "Cationic Photopolymerization of Epoxynorborane Linseed Oils: The Effect of Diluents" *J. Poly. Sci.: Part A 41*, 3440.
- Chen, J.; Soucek, M. (2003) "UV-Curing Kinetics of Cyclohexyl Epoxides with Real-Time Fourier Transform Infrared Spectroscopy" *J. Appl. Poly. Sci.*, vol. 90, 2485.
- Teng, G.; Soucek, M.D. (2003) "Blown Soybean Oil Ceramer Coatings for Corrosion Protection" *Macromol.Mater. Eng.*, 288, 844.
- Teng, G.; Soucek, M.D.; Vick, B.A.; Simonsick, W.J.; Sen, A. (2003) "Spectroscopic investigation of the Blowing Process of Soybean Oil" *Surf. Coat. Inter. Part B*, vol. 86, 221.
- Teng, G.; Soucek, M.D. (2003) "Effect of Addition Mode of Cycloaliphatic Diepoxide on the Morphology and Film Properties of Crosslinkable Core-Shell Latex" *J. Appl. Poly. Sci.* 88(2), 245.
- Chen, J.; Soucek, M. (2003) "Model for the Effects of Water on the Cationic UV-Curing of Cyclohexyl Epoxides" *J. Coat. Technol.*, vol. 75(937), 49.
- Chen, J.; Soucek, M. (2003) "Photo-initiated Cationic Polymerization of Cycloaliphatic Epoxide with Siloxane or Alkoxy silane Functionalized Polyol Coatings" *Eur. Polym. J.*, 39(3), 505.
- Teng, G.; Soucek, M.D. (2002) "Effect of Introduction Mode of Hydroxyl Functionality on Morphology and Film Properties of Cycloaliphatic Diepoxide Crosslinkable Core-Shell Latex" *J. Poly. Sci.: Part A 40*, 4256.
- Ni, H; Soucek, M.D. (2002) "Nanostructured Polyurethane Ceramer Coatings for Aircraft" *J. Coat. Technol.*, vol. 74(933), 125.
- Chen, J.; Soucek, M.D. (2002) "Epoxidation of Partially Norbornylized Linseed Oil" *Macromol. Chem. Phys.* 203, 2042.
- Ni, H; Daum, J.L.; Skaja, A.D; Soucek, M.D. (2002) "Cycloaliphatic Polyester Based High Solids Polyurethane Coatings: II. The Effect of Difunctional Acids" *Prog. Org. Coat.* vol. 45(1), 49.
- Chen, J.; Soucek, M.D.; Simonsick, W.J.; Celikay, R.W. (2002) "Preparation and Photopolymerization of Norbornyl Epoxidized Linseed Oil" *Polymer*, 40(20), 5379.
- Ni, H; Johnson, A.H.; Soucek, M.D.; Grant, J.T.; Vreugdenhil, A.J. (2002) "Polyurethane/Polysiloxane Ceramer Coatings: Evaluation of Corrosion Protection" *Macromol.Mater.Eng.* 287, 470.
- Ni, H; Daum, J.L.; Soucek, M.D. (2002) "Cycloaliphatic Polyester Based High Solids Polyurethane Coatings: I. The Effect of Difunctional Alcohols" *J. Coat. Technol.*, vol. 74(928), 49.
- Ni, H; Nash, H. A.; Worden, J. G.; Soucek, M.D. (2002) "Effect of Catalyst on the Reaction of an Aliphatic Isocyanate and Water" *J. Poly. Sci.: Part A 40*, 1677.
- Wold, C.R.; Ni, H.; Soucek, M.D. (2001) "Model Reaction Study on the Interaction between the Inorganic and Organic Phases in Drying Oil Based Ceramer Coatings" *Chem. Mater.*, 13(9), 3032.
- Soucek, M. D.; Teng, G.; Wu, S. (2001) "Cycloaliphatic Epoxide Crosslinkable Core-Shell Latexes: A New Strategy for Waterborne Epoxide Coatings" *J. Coat. Technol. Vol. 73(921)*, 117.
- Deffar, D.; Soucek, M. D. (2001) "Synergistic Effect of Driers on Soybean Oil-Based Ceramer Coatings" *J. Coat. Technol. Vol. 73(919)*, 95.

- Teng, G.; Wegner, J.R.; Hurtt, G. J.; Soucek, M. D. (2001) "Novel Inorganic/Organic Hybrid Materials Based on Blown Soybean Oil with Sol-Gel Precursors" *Prog. Org. Coat.* 42(1-2), 29.
- Deffar, D.; Teng, G.; Soucek, M. D. (2001) "Comparison of Titanium-Oxo-Clusters Derived from Sol-Gel Precursors with TiO<sub>2</sub> Nanoparticles in Drying Oil Based Ceramer Coatings" *Macromol.Mater.Eng.* 286, 204.
- Deffar, D.; Teng, G.; Soucek, M.D. (2001) "Inorganic-Organic Hybrid Coatings Based on Bodied Soybean Oil" *Sur. Coat. Int.: Part B Vol. 84( B2)*, 147.
- Ballard, R. L.; Sailer, R. A.; Larson, B.; Soucek, M. D. (2001) "Fracture Toughness of Inorganic-Organic Hybrid Coatings" *J. Coat. Technol. Vol. 73(913)*, 107.
- Teng, G.; Soucek, M.D. (2001) "Synthesis and Characterization of Cycloaliphatic Diepoxide Crosslinkable Core-Shell Latexes" *Polymer*, 42, 2849.
- Ballard, R. L.; Williams, J. P.; Njus, J. M.; Kiland, B. R.; Soucek, M.D. (2001) "Inorganic-organic Hybrid Coatings with Mixed Metal Oxides" *European Polymer Journal* 37, 381.
- Ni, H.; Skaja, A.D.; Soucek, M.D. (2000) "Acid-Catalyzed Moisture-Curing Polyurea/Polysiloxane Ceramer Coatings" *Prog. Org. Coat.* 40, 175.
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- Wold, C.R.; Soucek, M.D. (2000) "Viscoelastic and Thermal Properties of Linseed Oil-Based Ceramer Coatings" *Macromol. Chem. Phys.* 201(3), 382.
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- Wu, S.; Soucek, M.D. (2000) "Crosslinking of Model Latexes with Cycloaliphatic Diepoxides" *Polymer*, 41(6), 2017.
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- Wu, S.; Sears, M.T.; Soucek, M.D. (1999) "Siloxane Modified Cycloaliphatic Epoxide UV Coatings" *Prog. Org. Coat. Vol. 36*, 89.
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- Wu, S.; Soucek, M.D. (1998) "Effects of Siloxane Functionalized  $\epsilon$ -Caprolactone Polyols on Photocurable Epoxy Coatings" *J. Coat. Tech.*, vol. 70, No. 887, 53.
- Sailer, R.A.; Soucek, M.D. (1998) "Linseed and Sunflower Alkyd Ceramers" *Prog. Org. Coat.* vol. 33 (2), 117.
- Wu, S.; Soucek, M.D. (1998) "Kinetic Modelling of Crosslinking Reactions for Cycloaliphatic Epoxides with Hydroxyl- and Carboxyl-Functionalized Acrylic Copolymers: 1. pH and Temperature Effects" *Polymer* vol. 39(23), 5747.
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- Soucek, M.D.; Russell, D.R. (1998) "Synthesis of a Dinuclear Phosphido-Bridged Complex of Rhenium, X-ray Crystal Structure of  $\text{Re}_2(\mu\text{-H})[\mu\text{-}(t\text{-Bu})\text{PC}_6\text{H}_4\text{P}(\text{H})t\text{-Bu}](\text{CO})_7$ " *Inorg. Chem. Acta* 277(2), 253.
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- Wu, S.; Soucek, M.D. (1997) "Model Compound Studies for Acrylic Latex Crosslinking Reactions with Cycloaliphatic Epoxides" *J. Coat. Technol.* vol. 69(869), 43.
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## **Symposium and Chapters in Books**

Teng, G.; Soucek, M.D. (2000) "Cycloaliphatic Diepoxide Crosslinkable Core-Shell Latexes: The Effect of Addition Mode" *Macromol. Symp.* 155, 105.

Soucek, M.D.; Wu, S.; Chakrapani, S. (2000) Silicones and Silicone-Modified Materials *In ACS Symposium Series 729* (S.J. Clarson, J.J. Fitzgerald, M.J. Owen, and S.D. Smith Eds.) American Chemical Society, Washington, DC, Chapter 35.

Jang, B.Z.; Pater, R.H.; Soucek, M.D. (1993) A Comparative Study of Crystallinity and Crosslinking Effects on Deformation and Fracture Toughness in High Performance Polymers *In Advance in Chemistry Series No. 233, Toughened Plastics I* (C. K. Riew and A. J. Kinloch, Eds.) American Chemical Society, Washington, DC, Chapter 5.

## **Patents**

USA Patent Number 6,096,437 "Ceramer Coating Compositions" August 1, 2000.

USA Patent Number 6,174,967 "Composition of Epoxy Resin and (Cyclo)alkoxy-Substituted Organosilanes" January 16, 2001.