

ELEFThERIA ANTONIOU

Mineral Resources Engineering
Technical University of Crete
Kounoupidiana 73100, Chania, Crete, Greece.
E-mail: eantoniou@isc.tuc.gr

18 Loulakaki, Lentariana,
73134, Chania, Crete, GREECE
Tel: (+30) 6932355099 (cell)
(+30) 28210-37711 (work)

Teaching and Research Assistant (2010- date), Mineral Resources Engineering, Technical University of Crete

EDUCATION

Ph.D. in Chemical Engineering (2008), University at Buffalo, The State University of New York, Buffalo, NY.

Dissertation: Structure-Property Relationships in Associating Polymer Solutions

Advisor: Professor Paschalis Alexandridis

Diploma in Chemical Engineering (2001), National Technical University of Athens, Greece.

Diploma Thesis: "Development of a New Equilibrium Model for the Solubility of H₂S or/and CO₂ in Aqueous Methyldiethanolamine (MDEA) Solutions"

Advisor: Professor Nikolaos Markatos

HONORS & AWARDS

Mark Diamond Research Fund (MDRF) Grant, Graduate Student Association, University at Buffalo (2006)

Conference Grant, Graduate Student Association, University at Buffalo (2006)

"Graduate Student Excellence in Teaching Award", University at Buffalo (2005)

Travel Grant, NIST/NSF Center for High Resolution Neutron Scattering (CHRNS) (2004)

RESEARCH EXPERIENCE

Technical University of Crete, Mineral Resources Engineering, Hydrocarbons Chemistry and Technology Research Unit

Upgrade process optimization of used lubricating oils with catalytic hydrogen-treatment

Instrumental Analysis of Petroleum fractions: Open Column Chromatography (OCC), Gas & Liquid Chromatography (GC, HPLC), Infrared Spectroscopy with Fourier transform (FTIR)

Foundation for Research and Technology, HELLAS (FO.R.T.H.), Institute of Electronic Structure and Laser (I.E.S.L.) -Polymer Group

Dynamics of Soft-Colloids

- Depletion effect studies of star - linear polymer blends using light scattering
- Polymer/inorganic nanocomposites characterization in organic solvents

University at Buffalo, The State University of New York, Department of Chemical and Biological Engineering

Structure-property relationships in polymer solutions

- Investigated using rheological measurements solution properties of polysaccharides (structure, association) as affected by temperature, solvent quality, and polymer molecular weight.

Interactions between solvent, polymer, protein and/or surfactant molecules in aqueous solution

- Studied surfactant self-assembly as affected by the presence of cyclodextrins, which have the ability to complex with part of the surfactant.
- Examined polymer-protein interactions using the small angle neutron scattering (SANS) technique to obtain nanostructure information.

Thermodynamics and structure in solutions containing polymers and/or surfactants

- Used Light Scattering and Vapor Pressure Osmometer to obtain structural properties.

- Determined the surface energy properties of various liquids using contact angle measurements.

Research management

- Supervised the work of four undergraduate researchers.
- Provided lab training to new undergraduate and graduate students.
- Laboratory Safety Coordinator.

National Technical University of Athens, Greece, Department of Chemical Engineering

Senior-year diploma thesis:

- Modeled the equilibrium of a gas absorption column used to purify refinery toxic gases in the framework of a joined-project between the university and Asprofos Engineering S. A. The column used MDEA to absorb H₂S or/and CO₂ in its different stages. Experimental data from the literature were modeled to conclude in a general equation that described the solubility of H₂S or/and CO₂ in aqueous MDEA solutions.

TEACHING EXPERIENCE

Teaching Assistant, Mineral Resources Engineering, Technical University of Crete

Physical Processes (Spring 2010, teaching & Lab session)

Fossil Fuels (Fall 2010, teaching & Lab session)

Teaching Assistant – Department of Chemical & Biological Engineering, University at Buffalo, The State University of New York

MAE 204, Thermodynamics (Fall '07, Summer '05, '06, '07)

CE 457/527 Colloid & Surface Phenomena (Spring '05, '06)

CE 212, Introduction to Chemical Engineering (Fall '02, '03, '04, '05)

CE 304, Chemical Engineering Thermodynamics (Spring '03)

Assisted students to solve problem sets by leading recitations and holding office hours. Graded problem sets, quizzes, and final exams. Substituted the Professor in class, prepared and presented lectures. Maintained the course web page.

WORKSHOPS

12th European School on Rheology, Laboratory of Applied Rheology and Polymer Processing of the Katholieke Universiteit Leuven, Leuven, Belgium (September 2009)

Neutron Scattering – Laboratory Course, Jülich, Germany (September 2008)

EMPLOYMENT HISTORY

Foundation for Research and Technology Hellas (F.O.R.T.H.), Polymer Group, Institute for Electronic Structure and Laser: Postdoctoral Researcher (2008 - 2010)

Research Foundation, University at Buffalo, The State University of New York, Buffalo, NY: Research Assistant (2004-2008)

Department of Chemical & Biological Engineering, University at Buffalo, The State University of New York, Buffalo, NY: Teaching Assistant (2002-2008)

Kalipsis: Administrative Software Officer (Sept. 2001 - June 2002)

Responsible for registering the specifications of a software project, under development, and participated in the committee for the design of the flow chart of this software project.

Asprofos Engineering (A "Hellenic Petroleum" Company): Intern (Summer 1999)

Contributed on a number of Asprofos / Foster Wheeler design standards and methods used in designing process equipment.

"Kyknos" Food processing Company: Trainee Engineer (Summer 1998)

Supervised the product lines and the product quality control laboratory.

"Ukrnafta" Central Research Laboratory, Ivano-Frankivsk, Ukraine: Trainee Engineer (Summer 1997)

Analyzed technological properties of fluids used in oil wells drilling and casing. Also worked on intensification of oil production and analysis of chemical agents and materials.

PUBLICATIONS & CONFERENCES

Antoniou, E.; Tsianou, M. "Solution Properties of Dextran in Water and in Formamide" *J. Appl. Polym. Sci.* **2010**, in press.

Antoniou, E.; Themistou, E.; Sarkar, B.; Tsianou, M.; Alexandridis, P. "Structure and Dynamics of Dextran in Binary Mixtures of a Good and a Bad Solvent" *Colloid and Polym. Sci.* **2010**, 288, 1301-1312.

Antoniou, E.; Buitrago C. F.; Tsianou, M.; Alexandridis, P. "Solvent Effects on Polysaccharide Conformation" *Carbohydr. Polym.* **2010**, 79, 380-390.

Antoniou, E.; Alexandridis, P. "Polymer Conformation in Mixed Aqueous Polar Organic Solvents" *Eur. Polymer J.* **2010**, 46, 324-335.

Antoniou, E.; Vlassopoulos, D. "Polymer/inorganic nanocomposites characterization in organic solvents and in the presence of polymer chains (depletion effects)", Topical Meeting "Synthesis and Surface Modification of Nanocolloids", Baiona, Spain, **2009**.

Antoniou, E.; Tsianou, M.; Alexandridis, P. "Solvent Modulation of Polysaccharide Conformation" Extended Abstract, AICHE 2008 Annual Meeting, Philadelphia, Pennsylvania, United States, **2008**, #443c - Self Assembly in Solution I. <http://www.nt.ntnu.no/users/skoge/prost/proceedings/aiche-2008/data/papers/P133290.pdf>

Tsianou, M.; Fajalia, A. I.; Antoniou, E.; Alexandridis, P. "Control of Self-Assembly by Molecular Recognition Between Hydrophobes and Cyclodextrins" Abstracts of Papers, AICHE 2008 Annual Meeting, Philadelphia, Pennsylvania, United States, **2008**, #509e - Self Assembly in Solution II.

Antoniou, E.; Themistou, E.; Tsianou, M.; Alexandridis, P. "Polysaccharide solution properties modulated by solvent mixtures" Abstracts of Papers, 236th ACS National Meeting, Philadelphia, PA, United States, **2008**, POLY-633.

Antoniou, E.; Themistou, E.; Tsianou, M.; Alexandridis, P. "Dextran in polar solvents: Dilute solution viscometry" Abstracts of Papers, 236th ACS National Meeting, Philadelphia, PA, United States, **2008**, PMSE-194.

Antoniou, E.; Themistou, E.; Tsianou, M.; Alexandridis, P. "Solvent Effects on Polysaccharide Conformation" Extended Abstract, AICHE 2007 Annual Meeting, Salt Lake City, Utah, United States, **2007**, #418c - Fundamentals of Interfacial Phenomena II.

Antoniou, E.; Buitrago, C. F.; Tsianou, M.; Alexandridis, P. "Solution Properties of Polysaccharides in Water and Polar Organic Solvents" Abstracts of Papers, AICHE 2006 Annual Meeting, San Francisco CA, United States, **2006**, #462 - Self Assembly in Solution II. <http://aiche.confex.com/aiche/2006/techprogram/P74107.HTM>

Antoniou, E.; Tsianou, M.; Neelamegham, S.; Alexandridis, P. "Interactions between Fibrinogen and PEG Polymers in Aqueous Solution" Abstracts of Papers, AICHE 2006 Annual Meeting, San Francisco CA, United States, **2006**, # 204f - Self-Assembled Biomaterials. <http://aiche.confex.com/aiche/2006/webprogrampreliminary/Paper74221.html>

Antoniou, E.; Tsianou, M.; Alexandridis, P. "Solvent and Solute Effects on Aqueous Solution Properties of Associating Polymers" Abstracts of Papers, 230th ACS National Meeting, Washington, DC, United States, **2005**, COLL-023.

Antoniou, E.; Tsianou, M.; Alexandridis, P. "Solution Properties of Polysaccharides in Water and Polar Organic Solvents" *Polymer Preprints* (ACS Division of Polymer Chemistry) **2005**, *46*(2), 532-533.

Alexandridis, P.; Tsianou, M.; Antoniou, E.; Katori, Y.; Singh, I.; Neelamegham, S. "Interactions between Fibrinogen and PEG Polymers: A Neutron Scattering Investigation" *Polymer Preprints* (ACS Division of Polymer Chemistry) **2005**, *46*(2), 1250-1251.

PROFESSIONAL MEMBERSHIPS

American Institute of Chemical Engineers (AIChE)

American Chemical Society (ACS)

American Oil Chemist's Society (AOCS)

Professional Engineer, Chamber of Professional Engineers of Greece (TEE)

ACTIVITIES

Professional

Mark Diamond Research Fund (MDRF) reviewer (2007), University at Buffalo

Senator (2005), President (2003) and Secretary (2002) of the Hellenic Graduate Student Association at the University at Buffalo, The State University of New York.

Extracurricular

Podilatreis (Bicycle)

Leading member of the dance group "Hellenic Dancers" that performs traditional Greek dances (2002-2008).

Member of an amateur theatrical group that performed Odyssey rhapsodies at the 2001 European Amateur Theatre Festival. Also member of the Vafeio theatrical group (2001) that presented Eschyle's *Orestia*.