

Biographical Sketch

Helena E. Hagelin-Weaver Research Assistant Professor

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Professional Preparation:

Royal Institute of Technology (Sweden)	Chemical Engineering	M.Sc. 1995
Royal Institute of Technology (Sweden)	Chemistry	Ph.D. 1999
University of Florida (postdoc.)	Heterogeneous Catalysis	1999-2001

Appointments:

Research Assistant Professor, Department of Chemical Engineering, University of Florida, 2002-present.

Visiting Scientist, Department of Chemical Engineering, University of Florida, 2001-2002.

Research Areas:

Dr. Hagelin-Weaver's research focuses on heterogeneous catalyst development. Reactions at the interface between heterogeneous catalyst surfaces and gaseous or liquid reactants are the center of Dr. Hagelin-Weaver's research. Her research involves preparation and characterization of novel nano-structured catalysts, catalytic activity measurements and reactor design. In particular, her research group is using nanoparticle oxides as supports for various active metals. The hypothesis is that the nanoparticle oxides due to their intrinsic properties can result in unique catalytic activities of the resulting catalysts when they are used as supports. Dr. Hagelin-Weaver's research involves careful catalyst characterization using a number of surface science techniques to probe catalytic properties that are of importance for a high catalytic activity. The goal is to obtain a fundamental understanding of how the properties of the nanoparticle oxides influence the active metal properties and thus also the catalytic activity. Thus, solid-solid interfaces are also important in her research. Dr. Hagelin-Weaver's research group is always looking for new materials and innovative ways of preparing nano-structured supports as well as for novel techniques for controlled deposition of active metals onto the catalyst supports. Several of the IGERT team members have expertise in related areas and can thus form fruitful collaborations with Dr. Hagelin-Weaver.

Most Relevant Publications:

- 1) S.D. Jones, H.E. Hagelin-Weaver, "Structural and Electronic Characterization of Cu-ZnO Methanol Reforming Catalysts Supported on Nanoparticle Alumina", *Submitted*.
- 2) G.B. Hoflund, H.A.E. Hagelin, J.F. Weaver and G.N. Salaita, "ELS and XPS study of Pd/PdO methane oxidation catalysts", *Appl. Surf. Sci.* 205 (2003) 102-112.
- 3) H.A.E. Hagelin, J.F. Weaver, G.B. Hoflund and G.N. Salaita, "Electron Energy Loss Spectroscopic Investigation of Palladium Metal and Palladium(II) Oxide", *J. Electron Spectrosc. Relat. Phenom.* 124 (2002) 1-14.
- 4) H. Hagelin, B. Hedman, I. Orabona, T. Åkermark, B. Åkermark and C.A. Klug, "Investigation of the Palladium Catalyzed Aromatic Coupling of Pyridine Derivatives", *J. Mol. Cat. A* 164 (2000) 137-146.
- 5) H. Hagelin, J. Oslob and B. Åkermark, "Oxygen as Oxidant in Palladium-Catalyzed Inter- and Intramolecular Coupling Reactions", *Chem. Eur. J.* 5 (1999) 2413-2416.

Synergistic Professional Activities

Dr. Hagelin-Weaver is a member of the American Institute for Chemical Engineers (AIChE), the American Society for Engineering Education (ASEE) and the American Association for Women in Science (AWIS).

Educational and Outreach Activities

Dr. Hagelin-Weaver has attended teaching workshops to learn alternative teaching methods. Workshops include: "Teaching Well with Technology" (Center for Instructional Technology and Training [CITT] at the University of Florida), "Teaching and Learning in the Engineering Classroom" (UF) plus "WebCT" workshops (UF). She also participated in the ASEE Summer School for Chemical Engineering Faculty, Boulder, Colorado, Summer 2002.

Dr. Hagelin-Weaver has initiated a Women Mentoring Program in the Department of Chemical Engineering (including both undergraduate and graduate students) and she is working on expanding this program to include outreach activities for local high school girls.

International Collaborations:

Initiated collaboration with Prof. Thomas Maschmeyer at the Department of Chemistry, University of Sydney, Australia. Prof. Maschmeyer is part of the "Laboratory of Advanced Catalysis for Sustainability" and his research focuses on functional nanomaterials, which are important for the next generation heterogeneous catalysts. Other collaborations are with Chalmers Univ. Sweden.

Research funding received in last 5 years:

Approximately \$620,000; funding sources include NASA and ACS. **Biographical Sketch**