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## ***NETL* REPORTS:**

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Janine Galvin, a chemical engineer with the National Energy Technology Laboratory (NETL), won the 2008 Best PhD Thesis Particle Technology Forum Award for her thesis “On the Hydrodynamic Description of Binary Mixtures of Rapid Granular Flows and Gas-Fluidized Beds.”

Galvin, who grew up in Boise, Idaho, earned her bachelor of science degree in chemical engineering at the University of Idaho, Moscow and her master of science and PhD degrees at the University of Colorado, Boulder.

Although it was difficult at times, graduate school proved to be a great experience for Galvin. The various conferences in different parts of the country and abroad which she attended as part of her education were a great way for her to learn and share her findings as well as meet with a diverse cross-section of people, something for which she is appreciative. Galvin says that she is extremely grateful for her primary advisor, Christine Hrenya, who was essential in providing her encouragement and insightful perspective.

Galvin’s thesis work studied the flow of solid particles, which occur in a wide variety of industrial and geological systems, such as landslides, planetary rings, grain conveying, and energy production. She explains that “although the flow of solid particles is a common occurrence, compared to that of conventional liquids and gases, it remains poorly understood. Most solid flows are non-uniform (e.g. particles may differ in size, density, shape, etc.) and this non-uniformity can lead to interesting and non-intuitive behavior such as the separation of unlike particles (i.e. segregation). Theoretical analysis using kinetic-theory-based models is a means of studying these flows. The primary focus of my thesis work was how various assumptions impact kinetic theory predictions in the context of species segregation.” Her work at NETL’s Albany site deals with multiphase flow and coal gasification.

NETL is one of the U.S. Department of Energy’s national laboratories. Its mission is to advance the national, economic, and energy security of the United States. NETL has implemented a range of research and development programs with regard to energy and the environment that promise great advances in this field. The benefits of this research enable domestic coal, natural gas, and oil to economically power our nation’s homes, industries, businesses, and transportation while protecting our environment and enhancing our energy independence. Through its research and development efforts via partnerships, cooperative agreements, financial assistance, and contracts with universities and the private sector along with research done onsite, NETL focuses on creating commercially feasible solutions to national energy and environmental problems.