

*Asian American Engineer
of the Year*

Dr. Shelly Li

*Senior Technical Advisor
Idaho National Laboratory*



Citation of Accomplishments

Significant contributions to the development of pyroprocessing for spent nuclear fuel, as well as establishing ground-breaking international safeguards methodologies and assessments for the process.

Dr. Shelly Li obtained her Ph.D. in metallurgical engineering from the University of Minnesota. In 1994, Dr. Li joined Argonne National Laboratory-West (ANL-W), located at the Idaho National Laboratory (INL) Site, as a researcher to develop pyroprocessing technology as a means of closing nuclear fuel cycles. She was responsible for establishing and leading the ANL-W electrorefining team to process EBR-II spent fuel. During this period, she also performed a number of experiments on engineering scales to enhance the technology, improve fundamental understanding of the electrorefining process, and upgrade the operation and control of the process. Her research has resulted in equipment design and operational changes that greatly improved the efficiency of the process. From 1996 - 1999, Dr. Li was one of the key technical contributors to the successful demonstration of pyroprocessing technology to the National Research Council, which led to the Department of Energy (DOE) issuing a record of decision for treatment and management of sodium-bonded spent nuclear fuel by pyroprocessing in 2000.

Dr. Li's significant achievements include continued successful operation of the engineering-scale equipment to process sodium-bonded fuel since 2000 and, for the first time, the demonstration of group recovery of actinide metals, by liquid cadmium cathode, from used metal fuel at both bench and engineering scales. She was awarded two ANL Pacesetter Awards for outstanding contributions and impact to the ANL mission. Much of the ground-breaking work Dr. Li did to enable electrorefining of EBR-II spent nuclear fuel was done 1) with actual used nuclear fuel and 2) in one-of-a-kind, engineering-scale equipment. These two factors make this work unique in the world.

Dr. Li has published 23 peer-reviewed journal articles and numerous conference papers and technical reports. She also has four U.S. patents and two more pending. She was recognized recently with the 2016 INL Laboratory Director's Award for Exceptional Scientific Achievement.

Dr. Li has been on assignments at the International Atomic Energy Agency (IAEA) as a technical expert to support the IAEA in developing and assessing safeguard approaches in pyroprocessing facilities. She has also provided training courses to IAEA inspectors on pyroprocessing and safeguard technologies. In addition, she frequently supports international activities, including extensive international engagement in working groups and consultancies, representing the United States Department of Energy (as well as INL).

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