

## MAX R PHELPS

Sr. Development Engineer  
Chemical Process Development Group  
Pacific Northwest National Laboratory  
P.O. Box 999 MS K2-12  
Richland, WA 99352  
509 375-6678 (voice mail)  
509 372-4732 (Fax)  
[max.phelps@pnl.gov](mailto:max.phelps@pnl.gov)

Specialties                      Bench and Pilot-scale development

Education                      B.S. Chemical Engineering (1990). Washington State University

Professional Experience: Staff scientist and engineer; supercritical fluids, solvent substitution, catalytic reactions, membrane separations, and ultra-fine particle synthesis.

Since joining PNNL I've been involved in the scale-up and testing of a variety of chemical and physical process, with an emphasis on solvent substitution and the use of supercritical fluids. My experience with fluids ranges from bench-scale studies to pilot testing and development of both near-critical and supercritical processes.

Specific projects include the use of carbon dioxide for separations and parts cleaning, the use of reverse micelles for parts cleaning and advanced separations, the catalytic conversion of waste water to a gray water and useable fuel gas, and the development of a continuous process for synthesizing nano-scale particles. My current work is in the use of membranes to achieve fine separations of value or waste products from process streams.

Affiliations                      American Institute of Chemical Engineers (AIChE)  
National Defense Industrial Association (NDIA)

Honors & Awards              1993-R&D 100, Rapid Thermal Decomposition of Precursors in Solution (RTDS)  
1995-Commercialization Award, DOE/OIT  
1998-R&D 100, Miclean/Micare  
1999-FLC, Miclean/Micare  
Outstanding Team Awards; 1996, 1997, 1999

Publications available on request