

**Postdoctoral Research Program
U. S. Environmental Protection Agency
National Risk Management Research Laboratory
Sustainable Technology Division
Cincinnati, Ohio**

Project # NRMRL/STD-2004-02
Sustainable Chemistry: Merging Green Chemistry and Green Engineering

The National Risk Management Research Laboratory's (NRMRL) Sustainable Chemistry Program is focused on the integration of principles which define green chemistry and green engineering to develop chemical technologies that offer increased levels of sustainability when compared to an existing technology. This research is performed in conjunction to additional in-house research efforts in the Sustainable Technology Division. NRMRL is currently seeking to place a postdoctoral researcher in the Sustainable Chemistry Program. The researcher's role is to expand in-house capabilities in this area and at the same time his/her own range of expertise. The goal of NRMRL's Sustainable Chemistry Program is to demonstrate alternative synthesis techniques (green technologies) for the production of chemicals with emphasis towards implementation in an industrial setting. The researcher will be assigned to the Systems Analysis Branch, Sustainable Technology Division in Cincinnati, Ohio.

For this project, experience in organic or inorganic chemistry or chemical engineering with a strong background in catalysis fundamentals and catalyst synthesis (homogeneous and/or heterogeneous) that are applicable to the synthesis of partially oxygenated molecules is advantageous. Prior experience should include development, synthesis and characterization of catalysts, reaction kinetics and analytical techniques. Good written and oral communication abilities and computer literacy skills are necessary.

- The researcher will assist a team of EPA chemists and engineers to design, characterize and investigate reactions in the area of green and sustainable chemistry. Experimentation will be conducted to explore and improve on the proposed technology and to expand on new areas of chemical synthesis.
- The researcher will be involved in planning and conducting experiments in support of the above objectives which may include catalyst design, synthesis, analytical characterization and experimentation, literature reviews, experimental design, and bench- and/or pilot-scale experiments. The researcher will assist in preparing and executing quality assurance project plans and health and safety plans.
- The researcher will be involved in necessary sample preparation, clean-up and final analysis. Analytical methods may include, but are not limited to, FID and mass-spectrometry gas chromatography, UV-Vis spectrometry, infrared spectroscopy, nuclear magnetic spectroscopy and thermogravimetric analyses.

- The researcher will be encouraged to summarize research in the form of peer reviewed journal articles and presentations at national and specialty scientific conferences.

Good written and oral communications are necessary, and a consistent publication record is a plus. Applicants should have received a doctoral degree in chemistry or chemical engineering or a related field within three years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. U.S. citizenship or lawful permanent resident status is preferred. The program is open to all qualified individuals without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran.

The participants will be selected based on academic records, recommendations, research interests, compatibility of background and interests with research programs and projects at NRMRL/STD, and the availability of funds, staff, programs, and equipment.

The appointment is full-time for one year and may be renewed for up to two additional years upon recommendation of NRMRL and subject to availability of funds. The participant will receive a monthly stipend in the range of \$4,500-\$5,000. Limited inbound travel and moving expenses may be reimbursed according to established policies. The participant must show proof of health and medical insurance.

For technical questions about the project, contact: Dr. Michael Gonzalez, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268, e-mail: gonzalez.michael@epa.gov.

The Postdoctoral Research Program for NRMRL is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # NRMRL/STD-2004-02 when calling or writing for information.*** For additional information and application materials contact: Postdoctoral Research Program/NRMRL, Attn: Betty Bowling, Science and Engineering Education - MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117, Phone: (865) 576-8503 FAX: (865) 241-5219, e-mail: bowlingb@ornl.gov.

An application can be found at www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf