

William R. Wiley

EMSL In Brief

Environmental Molecular Sciences Laboratory

Zhang Receives M.T. Thomas Award for Postdoctoral Accomplishments *Experimental refinements lead to atomic-level insights on promising material*

Congratulations to Zhenrong Zhang of the Pacific Northwest National Laboratory on being selected as the 2007 recipient of M.T. Thomas Award for Outstanding Postdoctoral Achievement. The award recognizes her scientific contributions that promote the mission of the Department of Energy's Environmental Molecular Sciences Laboratory. Her new experimental method and resulting measurements are important steps in material science and may lead, among other things, to designing and controlling catalysts that produce clean-burning hydrogen fuel.

Zhang was selected for the award for achieving the first atomically resolved high-temperature scanning tunneling microscopy measurements and resulting insights on the understanding of the adsorbate reactivity and diffusion dynamics on TiO_2 . This oxide is an extremely promising material with applications in such diverse and technologically important areas as catalysis, air purification, and wastewater treatment.

At EMSL, Zhang designed a new sample heating stage and implemented a breakthrough methodology that resulted in near-perfect TiO_2 surfaces with negligible water contamination. Her methodology was the crucial advance needed to identify the preferred adsorption or adherence sites and dissociation pathways for water and alcohols as well as the diffusion dynamics of surface defects and hydroxyl groups.

For more information, contact EMSL Communications Manager Mary Ann Showalter (509-371-6017).



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