

## BIOGRAPHICAL SKETCH

NAME Kenneth Kemner	POSITION TITLE Physicist/Group Leader		
eRA COMMONS USER NAME			
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Xavier University, 1986 University of Notre Dame, 1993	B.S. Ph.D	1986 1993	Physics Physics

**Positions and Honors:**

ARGONNE NATIONAL LABORATORY Environmental Research Division (1996-2005), Biosciences Division (2005-present) Title: Physicist Primary responsibility: the development of a synchrotron-based environmental research program focusing on metal-mineral-microbe interactions.	1996-present Condensed Matter and Radiation Sciences Division Title: National Research Council Fellow Responsibilities included: the investigation of the local structure of contaminants in different crown-ethers, soils, colloidal clays and synthetic resins for remediation of contaminated soil at the Savannah River Site.
NAVAL RESEARCH LABORATORY Title: National Research Council Fellow Responsibilities included: the investigation of the local structure of contaminants in different crown-ethers, soils, colloidal clays and synthetic resins for remediation of contaminated soil at the Savannah River Site.	1993-1996

  

U. OF NOTRE DAME PHYSICS DEPARTMENT Title: Research Associate Designed and developed the first Low-Temperature, Liquid Nitrogen-cycled He-gas-filled TEY EXAFS detector coupled with a three stage goniometer system. Used this detector to investigate the local interfacial structure of new blue-light laser material ZnTe/CdSe. Discovered the formation of high-strained phases at the ZnTe/CdSe superlattice interfaces, contrary to previous strain minimization theory, and developed the new theory to explain these results. Used newly-developed TEY detector to investigate the local atomic structure of thin film Ti Silicides, Fe/Cu superlattices, and Ga <sub>x</sub> In <sub>1-x</sub> As thin films.	1987-1993
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**Selected peer-reviewed publications**

- K. M. **Kemner**, S. D. Kelly, "Synchrotron-based Techniques for Monitoring Metal Transformations," Manual of Environmental Microbiology, Third Edition, accepted.
- K. M. **Kemner**, E. J. O'Loughlin, S. D. Kelly, M. I. Boyanov, "Synchrotron x-ray investigations of mineral-microbe-metal interactions," *Elements* August, 2005, pg. 217-221.
- K. M. **Kemner**, S. D. Kelly, E. J. O'Loughlin, T. Khare, Y. Londer, M. Schiffer, L. A. Moe, B. G. Fox, M. I. Donnelly, and C. S. Giometti, "XRF and XAFS Analysis of Electrophoretically Isolated Nondenatured Proteins," *Physica Scripta* **T115** 940-942, 2005.
- K. M. **Kemner**, S. D. Kelly, B. Lai, J. Maser, E. J. O'Loughlin, D. Sholto-Douglas, Z. Cai, M. A. Schneegurt, C. F. Kulpa, Jr., K. H. Nealson, "Elemental and Redox Analysis of Single Bacterial Cells by X-ray Microbeam Analysis," *SCIENCE*, **306** 686-687, 2004.
- Y. Suzuki, S. D. Kelly, K. M. **Kemner**, J. F. Banfield, "Enzymatic U(VI) reduction by *Desulfosprosinosus* species," *Radiochim. Acta* 92 11-16, 2004.
- E. J. O'Loughlin, S.D. Kelly, R.E. Cook, R. Csencsits, and K.M. **Kemner**, "Reduction of uranium(VI) by mixed Fe(II)/Fe(III) hydroxide (green rust): Formation of UO<sub>2</sub> nanoparticles," *Environ. Sci. Technol.* 37 721-727, 2003.

- S. C. Brooks, J. K. Fredrickson, S. L. Carroll, D. W. Kennedy, J. M. Zachara, A. E. Plymale, S. D. Kelly, K. M. **Kemner**, and S. Fendorf, "Inhibition of Bacterial U(VI) reduction by calcium," *Environ. Sci. Technol.* **37** 1850-1858, 2003.
- S. Kelly, M. Newville, L. Cheng, K. M. **Kemner**, S. Sutton, P. Fenter, N. Sturchio, C. Spotl, "Uranyl incorporation in natural calcite," *ES&T* **37** 1284-1287, 2003.
- S.D. Kelly, K. M. **Kemner**, J. B. Fein, D. A. Fowle, M. I. Boyanov, B. A. Bunker, N. Yee, "X-ray absorption fine structure determination of pH-dependent U-bacterial cell wall interactions," *Geochimica et Cosmochimica Acta.*, **66** 3855-3871, 2002.
- Y. Suzuki, S. D. Kelly, K. M. **Kemner**, J. F. Banfield, "Nanometer-size products of uranium bioreduction," *Nature* **419** 134, 2002.
- K. M. **Kemner**, S. D. Kelly, A. I. Tsapin, M. G. Goldfeld, K. H. Nealson, K. Orlandini, "XAS investigations of Fe(VI)," *J. Synchrotron Rad.* **8** 949-951, 2001.
- M. Labrenz, G. K. Druschel, T. Thomsen-Ebert, B. Gilbert, S. A. Welch, K. M. **Kemner**, G. A. Logan, R. E. Summons, G. De Stasio, P. L. Bond, B. Lai, S. D. Kelly, J. F. Banfield, "Sphalerite (ZnS) deposits forming in natural biofilms of sulfate reducing bacteria," *Science* **290** 1744-1747, 2000.
- K. M. **Kemner**, B. Lai, J. Maser, M. A. Schneegurt, Z. Cai, P. P. Ilinski, C. F. Kulpa, D. G. Legnini, K. H. Nealson, S. T. Pratt, W. Rodrigues, M. Lee Tischler, W. Yun, "Use of The High-energy X-ray Microprobe At The Advanced Photon Source To Investigate The Interactions Between Metals And Bacteria," *X-Ray Microscopy: Proceedings of the Sixth International Conference*, pg. 319-322, 2000, American Institute of Physics.