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Professional Experience

- 2008-Present. Argonne National Laboratory
  - 2009-Present. Assistant Geochemist, Chemical Sciences and Engineering
  - 2008-2009. Postdoctoral fellow, Chemical Sciences and Engineering
- 2003-2008. University of Illinois at Chicago
  - 2005-2007. Research Assistant, Earth and Environmental Sciences
  - 2004-2005. Teaching Assistant, Earth and Environmental Sciences
  - 2003-2004. Research Assistant, Earth and Environmental Sciences
- 2002-2003. Junior Scientist, Nexgeo Inc., Korea
- 1999-2002. Military services
- 1998. Junior Scientist, SK E&C Laboratory, Korea
- 1996-1998. Research Assistant, Geological Sciences, Seoul National University, Korea

Education

- PhD, Earth and Environmental Sciences, University of Illinois at Chicago, 2007
- MS, Earth System Sciences, Seoul National University, Korea, 1998
- BS, Cum Laude, Geological Sciences, Seoul National University, Korea, 1996

Research Activities

- **Ion adsorption processes at mineral-solution interfaces**: *in-situ* and real time measurements of interfacial adsorption speciation of metal ions, competitive adsorption and exchange kinetics
- **Interactions between heavy metals and dissolved organic matter**: determination of molecular-scale structure of the organic film on mineral surfaces and its effect on the heavy metal complexation and sequestration
- **Ion exchange and hydration of clay minerals**

Career Highlights

- **Awards**
  - Korean Government Overseas Fellowship, Korea; 2003 - 2006
  - Seoul National University Honors Fellowship, Korea; 1993 - 1996

- **Symposium Organizer for International Conferences**
  - *Structure and Dynamics of Ions and Water at Mineral-Water Interfaces: Insights from Experimental and Computational Studies*, Goldschmidt 2012, Montreal, Canada, June 24-29, 2012.

- **Reviewer work**
  - **Journal article review**: *Environmental Science & Technology, Journal of Physical Chemistry, Geochimica et Cosmochimica Acta, Surface Science, Water Research,*

Physical Review

- **User facility proposal review:** Stanford Synchrotron Radiation Lightsource (SSRL), SPring-8 (Japan)

Professional Society Affiliations

- American Chemical Society
- Mineralogical Society of America
- Geochemical Society
- The Clay Minerals Society

Publications

- Lee, S.S., Fenter, P., and Park, C. In-situ x-ray transmission flow-through cell for studies of temporal and spatial variations of ion distributions at mineral - water interfaces. *Journal of Synchrotron Radiation, in review*.
- Fister, T.T., Lee, S.S., Fenter, P., Long, B., Gewirth, A.A., Shi, B., and Assoufid L. Interfacial lithiation of a metal silicide thin film. *The Journal of Physical Chemistry, in review*.
- Lee, S.S., Nagy, K.L., Sturchio, N.C., and Fenter, P. Monovalent ion adsorption at the muscovite (001) – water interface: Relationships among ion coverage and speciation, interfacial water structure, and substrate relaxation. *Langmuir,* 28, 8637-8650.
- Schmidt, M., Lee, S.S., Wilson, R., Soderholm, L., and Fenter, P. (2012) Sorption of tetravalent thorium on muscovite. *Geochimica et Cosmochimica Acta,* 88, 66-76.
- Schmidt, M., Wilson, R.E., Lee, S.S., Soderholm, L., and Fenter, P. (2012) Adsorption of plutonium oxide nanoparticles. *Langmuir*, 28, 2620-2627.
- Lee, S.S., Nagy, K.L., Park, C., and Fenter, P. (2011) Heavy metal sorption at the muscovite (001) – fulvic acid interface. *Environmental Science & Technology*, 45, 9574-9581.
- Fenter, P., Lee, S.S., Zhang, Z., Sturchio, N.C. (2011) In-situ imaging of orthoclase-aqueous solution interfaces with X-ray reflection interface microscopy. *Journal of Applied Physics*, 110, 102211-1-9.
- Fenter, P., Lee, S.S., Skelton, A.A., Cummings, P.T. (2011) Direct and quantitative comparison of pixelated density profiles with high resolution X-ray reflectivity data. *Journal of Synchrotron Radiation*, 18, 257-265.
- Lee, S.S., Fenter, P., Park, C., Sturchio, N.C., Nagy, K.L. (2010) Hydrated cation speciation at the muscovite (001) - water interface, *Langmuir*, 26, 16647-16651; highlighted as Editor's Choice in *Science* (2010), 330, 1289-1291.
- Fenter, P., Lee, S.S., Park, C., Soderholm, L., Wilson, R.E., Schwindt, O. (2010) Interaction of muscovite (001) with Pu^{3+} bearing solutions at pH 3 through ex-situ observations. *Geochimica et Cosmochimica Acta*, 74, 6984-6995.
- Fenter, P., Lee, S.S., Park, C., Catalano, J.G., Zhang, Z., and Sturchio, N.C. (2010) Probing interfacial reactions with X-ray reflectivity and X-ray reflection interface microscopy: Influence of NaCl on the dissolution of orthoclase at pOH 2. *Geochimica et Cosmochimica Acta*, 74, 3396-3411.
- Lee, S.S., Park, C., Fenter, P., Sturchio, N.C., and Nagy, K.L. (2010) Competitive adsorption of strontium and fulvic acid at the muscovite-solution interface observed with resonant anomalous X-ray reflectivity, *Geochimica et Cosmochimica Acta*, 74, 1762-1776.
- Lee, S.S., Nagy, K.L., Park, C., and Fenter, P. (2009) Enhanced uptake and modified distribution of mercury(II) by fulvic acid on the muscovite (001) surface, *Environmental*

Science and Technology 43, 5295-5300; highlighted as Editor's Choice in *Science* (2009), 325, 12.

- Lee, S.S., Fenter, P., Park, C., and Nagy, K.L. (2008) Fulvic acid sorption on muscovite mica as a function of pH and time using in-situ X-ray reflectivity. *Langmuir* 24, 7817-7829; highlighted in *APS Science* (2008), p. 42-43.
- Lee, S.S., Nagy, K.L., and Fenter, P. (2007) Distribution of barium and fulvic acid at the mica-solution interface using in-situ X-ray reflectivity. *Geochimica et Cosmochimica Acta* 71, 5763-5781.
- Lee, S.S., Guggenheim, S., Dyar, M.D., and Guidotti, C.V. (2007) Chemical composition, statistical analysis of the unit cell, and electrostatic modeling of the structure of Al-saturated chlorite. *American Mineralogist* 92, 954-965.
- Kim, J.J., Kim, S.J., and Lee, S.S. (2003) Gallionella ferruginea in ochreous precipitates from acid mine drainage in Donghae coal mine area, Korea. *Geosciences Journal, Seoul* 7, 289-292.
- Lee, S.S. and Kim, S.J. (2002) Mineralogical study on the clay formation and heavy metal speciation in the acidified soil profile of the Onsan industrial area. *Journal of Mineralogical Society of Korea* 15, 1-9.