David L. West
Oak Ridge National Laboratory
Building 5800 MS 6075
Oak Ridge, TN 37831–6075
865–576–2264 (Voice) 865–574–1249 (Fax)
westdl@ornl.gov

SUMMARY

Materials scientist, currently developing materials and techniques for harsh environment sensing. Background includes 4+ yrs. industrial R&D and ~5 yrs. national lab experience in addition to education in science and engineering (BA Physics, MS/PhD Materials Science & Engineering.). Can also offer proficiency in LabVIEW, MS Office, and drafting/technical drawing as well as familiarity with common laboratory electronic, gas-handling, and wet-chemistry equipment.

EDUCATION

PhD, Materials Science and Engineering, University of Illinois (Urbana-Champaign), 05/02.
- Thesis topic: Production of textured piezoelectric ceramics.

MS, Materials Science and Engineering, University of Washington (Seattle), 03/96.
- Thesis topic: Microstructure effects on proton conduction in oxides.

BA, Physics, University of California (Santa Cruz), 06/87.

PROFESSIONAL EXPERIENCE

Research Associate, 09/05 – Present (09/07).
Post-Doctoral Research Associate, 11/02 – 09/05.
Oak Ridge National Laboratory. Oak Ridge, TN.
- Primary emphasis: Development of sensors for use in harsh environments.
- Largest project to date was development of a NO_x sensor for diesel engines (in collaboration with Ford Motor Company and Lawrence Livermore National Laboratory).
- Have also initiated and led efforts to develop NH_3 and SO_2 sensors for combustion exhausts.
- Work has been presented at seven technical conferences, appeared in four peer-reviewed publications, and resulted in one US and one international patent application.

Graduate Assistant, 09/95 – 08/96, 09/97 – 11/02.
University of Illinois. Urbana, IL.
- Research focus: "Reactive-templated grain growth" processing of oxides (PhD project).
- Synthesized complex oxides by wet-chemical and molten-salt methods, and studied phase and microstructure development (XRD, SEM/EDS) during heat treatment.
- Demonstrated that formulation could control initial densification behavior and texture development during reactive-templated grain growth processing of $Bi_{1/2}Na_{1/2}TiO_3$.

Graduate Assistant, 09/93 – 08/95.
University of Washington. Seattle, WA.
- Research focus: Role of microstructure in H^+ conduction of $BaCe_{1-x}Gd_xO_3$ (MS project).
- Fabricated and characterized (microstructure and electrical properties) polycrystalline and single-crystal specimens of $BaCe_{1-x}Gd_xO_3$.
- Results showed that both grain interiors and boundaries contribute to H^+ conduction.

PROFESSIONAL EXPERIENCE (CONT.)

Recording Performance Intern, 04/92 – 08/93.
Nashua Computer Products. Santa Clara, CA.

- Primary emphasis: Glide height testing of rigid disks.
- Produced glide height standards for use in manufacturing and tested developmental product.

Associate Research Physicist, 02/89 – 08/91.
Tandy Magnetic Media. Santa Clara, CA.

- Primary emphasis: Characterization and failure analysis of magnetic tape and raw materials using SEM/EDS, VSM, LOM, profilometry, and mechanical test equipment.
- Supported and interfaced with R&D, QA, and manufacturing.

Associate Engineer, 03/88 – 02/89.
Domain Technology. Milpitas, CA.

- Primary emphasis: Development of training materials for an electroless plating operation.

SELECTED PUBLICATIONS

- D. L. West, M. A. Buckner, F. C. Montgomery, T. R. Armstrong, and R. J. Warmack, "Non-Nernstian sensing arrays for detection of NH_3 in diesel exhausts: A proof-of-principle investigation," *in preparation*.
- D. L. West, F. C. Montgomery, and T. R. Armstrong, "Total NO_x sensing elements with compositionally identical oxide electrodes," *Journal of the Electrochemical Society*, **153**[2], H23–8, 2006.
- D. L. West, F. C. Montgomery, and T. R. Armstrong, "NO-selective NO_x sensing elements for combustion exhausts," *Sensors and Actuators B*, **111-112**, 84–90, 2005.
- D. L. West and D. A. Payne, "Reactive-templated grain growth processing of $Bi_{1/2}(Na,K)_{1/2}TiO_3$: Effects of formulation on texture development," *Journal of the American Ceramic Society*, **86**[7], 1132–7, 2003.

SELECTED CONFERENCE PRESENTATIONS/PAPERS

- D. L. West, F. C. Montgomery, and T. R. Armstrong, "High-temperature, solid-electrolyte based sensing elements for NO_x and SO_x" (invited), *Materials Science and Technology '07*, Detroit, MI, 2007.
- D. L. West, F. C. Montgomery, and T. R. Armstrong, "High-T NO_x sensing elements using conductive oxides and Pt," *ICEF2004, 2004 Fall Technical Conference of the ASME Internal Combustion Engine Division*, Long Beach, CA, 2004.

PATENTS

- F. C. Montgomery, D. L. West, and T. R. Armstrong, "NO_x sensing devices having conductive oxide electrodes," U.S. Patent Application 20060073070; Int. Patent Application PCT/US2005/034279, both published in 2006.