

VENKATA M. VOORA

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SUMMARY

- ~6 years of research experience in *semiconductor device fabrication and characterization*.
- Extensive laboratory research experience, superior analytical and communication skills, capable of working independently as well as in a team, and capable of learning on-job.
- Currently seeking a challenging professional position to utilize the education and experience as a materials and electrical engineer in a multidisciplinary environment.

EDUCATION

Aug 2011 **Doctor of Philosophy**, Department of Electrical Engineering, University of Nebraska, Lincoln, USA.
Apr 2006 **Master of Technology**, AMITY Institute of Nanotechnology, AMITY University, Noida, India.
Apr 2003 **Bachelor of Technology**, Department of Electronics and Communication Engineering, Jawaharlal Nehru Technological University, Hyderabad, India.

TECHNICAL COMPETENCY

Growth and Fabrication: Physical vapor deposition (Pulsed-laser deposition, DC/RF magnetron sputtering, and thermal evaporation) and Spin coating.

Structural Characterization: Atomic force microscopy (AFM), Scanning electron microscope (SEM), Transmission electron microscopy (TEM), and Raman spectroscopy.

Optical and Electrical Characterization: Spectroscopic ellipsometry (SE), Sawyer-Tower circuit, capacitance-voltage, current-voltage, and electrical Hall measurement.

Materials: Si, Al₂O₃, a-Sapphire, High-k material (BaTiO₃), ZnO, Ag, Au, Ni, Fe₂O₃, and AlGaAs.

Computer Skills: Wvase, Fortran, Visual Basic, Origin, Matlab, Latex, Solid Edge, Labview, C, C++, and MS Office.

EXPERIENCE

Aug 2011 – present

Postdoctoral Researcher, Electrical Engineering, University of Nebraska-Lincoln, USA

- Performed optical characterizations of III-V (AlGaAs) compound semiconductor structures.

Jun 2006 – Aug 2011

Graduate Research Assistant, Electrical Engineering, University of Nebraska-Lincoln, USA

- Fabricated ferroelectric (high-k)-piezoelectric transparent compound semiconductor (ZnO) heterostructures (MOS, and transistor) using physical vapor deposition (PVD) processes.
- Performed characterizations of ferroelectric-piezoelectric semiconductor heterostructures.
- Examined electrical and electro-optic properties of ferroelectric-piezoelectric semiconductor heterostructures.
- Implemented numerical algorithms and calculated the spontaneous polarization coupling in ferroelectric-piezoelectric semiconductor heterostructures.
- Identified the spontaneous polarization coupling phenomenon in ferroelectric-piezoelectric semiconductor thin film heterostructures.
- Designed a magnetostrictive-piezoelectrically coupled triple-junction transistor for multi resistive memory applications.
- Calculated magneto electric response in corrugated-magnetostrictive-piezoelectric interfaces.
- Conducted AFM studies on pre-patterned substrates.

Jul 2009 – Sep 2009 and Jul 2008 – Oct 2008 (Collaboration with University of Nebraska-Lincoln)

Research Assistant, Institute for Experimental Physics II, University of Leipzig, Germany

- Fabricated ferroelectric-piezoelectric semiconductor-ferromagnetic heterostructures using PVD processes.
- Investigated electrical and magnetic response of ferroelectric-piezoelectric semiconductor-ferromagnetic heterostructures.

Jun 2005 – Apr 2006

Research Assistant, Workgroup Ellipsometry, University of Leipzig, Germany

- Investigated dielectric properties and Implemented numerical methods for Pt-BaTiO₃-Pt structures.

Jan 2005 – Apr 2005

Characterization Assistant, MEMS technology development group, Semiconductor Complex Limited, Mohali, India

- Developed and electrically characterized resistive based relative humidity microsensor.

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PUBLICATIONS

- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, N. Ashkenov, H. Schmidt, N. Ianno, and M. Schubert, "Interface polarization coupling in piezoelectric-semiconductor ferroelectric heterostructures", **Physical Review B** 81, 195307 (2010).
- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, N. Ashkenov, and M. Schubert, "Resistive hysteresis and interface charge coupling in BaTiO₃-ZnO heterostructures", **Applied Physics Letters** 94, 142904 (2009).
- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, N. Ashkenov, and M. Schubert, "Electrical properties of ZnO-BaTiO₃-ZnO heterostructures with asymmetric interface charge distribution", **Applied Physics Letters** 95, 082902 (2009).
- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, and M. Schubert, "Interface-charge-coupled polarization response of Pt-ZnO-BaTiO₃-ZnO-Pt heterostructures: Three-layer model expansion", **Materials Research Society Symposia Proceedings** 1110, 1110-C06-14 (2009).
- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, N. Ashkenov, and M. Schubert, "Interface-charge-coupled polarization response of Pt-BaTiO₃-ZnO-Pt heterojunctions: A physical model approach", **Journal of Electronic Materials** 37, 1029-1034 (2008).
- V. M. Voora, T. Hofmann, A. C. Kjerstad, M. Brandt, M. Lorenz, M. Grundmann, and M. Schubert, "Interface-charge-coupled polarization response model of Pt-BaTiO₃-ZnO-Pt heterojunctions: Physical parameters variation", **Materials Research Society Symposia Proceedings** 1074E, 1074-I01-11 (2008).
- V. M. Voora, T. Hofmann, M. Brandt, M. Lorenz, M. Grundmann, and M. Schubert, "Electrooptic ellipsometry study of piezoelectric BaTiO₃-ZnO heterostructures", **Physica Status Solidi (c)** 5, 1328 (2008).

CONFERENCE PRESENTATIONS

- V. M. Voora, T. Hofmann, and M. Schubert, "The corrugated interface strain coupled magnetostrictive-ferroelectric piezoelectric semiconductor device", **Nebraska MRSEC Symposium**, October, Lincoln (2010).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "Generalized physical model for ferroelectric properties of BaTiO₃-ZnO, and ZnO-BaTiO₃-ZnO thin films: Explanation for resistive switching properties", **51st Electronic Materials Conference**, June, Pennsylvania (2009).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "ZnO-BaTiO₃-ZnO: Unipolar ferroelectric transistor structures with spontaneous interface charge coupling for non-volatile switching applications", **Materials Research Society Fall Meeting**, December, Boston (2009).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "Wurtzite-Perovskite-Wurtzite Interface Polarization Hysteresis Model", **Graduate Student Poster Session**, April, Lincoln (2009).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, N. Ashkenov, M. Lorenz, and M. Grundmann, "Interface-charge-coupled ferroelectric hysteresis resistance switching in Pt-ZnO-BaTiO₃-Pt heterojunctions: A physical model approach", **2008 Materials Research Society Spring Meeting**, March, San Francisco (2008).
- M. Brandt, H. Hochmuth, M. Lorenz, M. Schubert, V. M. Voora, and M. Grundmann, "Epitaxial BTO/ZnO heterostructures", **2nd International Symposium On Transparent Conductive Oxides**, Hersonissos (2008).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "ZnO-BaTiO₃ interface polarization hysteresis model", **The 5th International Workshop on ZnO and Related Materials**, Michigan (2008).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "Polarization coupled response of ZnO-BaTiO₃ heterojunctions: a model approach", **Electronic Materials Conference**, June, Notre Dame (2007).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "Electrooptic ellipsometry study of spontaneous polarization coupling in piezoelectric ZnO-BaTiO₃ heterostructures", **International Workshop on Synthesis of Functional Oxide Materials**, August, Santa Barbara (2007).
- V. M. Voora, T. Hofmann, M. Schubert, M. Brandt, M. Lorenz, and M. Grundmann, "Electrooptic ellipsometry study of spontaneous polarization coupling in piezoelectric ZnO-BaTiO₃ heterostructures", **4th International Conference on Spectroscopic Ellipsometry**, June, Stockholm (2007).
- V. M. Voora, N. Ashkenov, T. Hofmann, M. Grundmann, and M. Schubert, "Modeling asymmetric polarization hysteresis of BaTiO₃-ZnO heterostructures", **70. German Physical Society Spring Meeting**, Dresden (2006).