

Onise Sharia

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Education:

Ph.D. student in the Department of Physics 2002-present

- The University of Texas at Austin, Austin, Texas
- Thesis: "Theoretical investigation of transition metal oxides as high-k dielectrics in CMOS technology".
- Advisor: Professor Alex Demkov

B.S. in Physics, Tbilisi State University, Georgia, 2001

Experience:

2002-2004 Teaching Assistant, Department of Physics, the University of Texas at Austin
2004-present Research Assistant, Department of Physics, the University of Texas at Austin

PhD research:

My interest is in electronic materials and computational solid state physics. I specialize in *ab-initio* calculations of electronic properties using density functional theory. My research covers two areas: high-k materials and epitaxial growth of crystals on vicinal surfaces.

Presentations:

1. O. Sharia, A. A. Demkov, G. Bersuker, H. L. Lee, "On the role of Al doping at the SiO₂/HfO₂ interface ", 4th International Symposium on Advance Gate Stack Technology, Dallas, TX, September 2007.
2. O. Sharia, A. A. Demkov, G. Bersuker, H. L. Lee, "Theoretical study of the insulator/insulator interface: band alignment at the SiO₂/HfO₂ junction" American Physical Society March meeting, Denver, CO, March 2007.

3. O. Sharia and A.A. Demkov, "Internal dielectric interface: SiO₂-HfO₂", Materials Research Society Spring Meeting, San Francisco, CA, April 2007.
4. O. Sharia, A. A. Demkov, G. Bersuker, H. L. Lee, "Theoretical study of the insulator/insulator interface" 3rd International Symposium on Advance Gate Stack Technology, Austin, TX, September 2006.
5. O. Sharia, A. A. Demkov, G. Bersuker, H. L. Lee, "Internal dielectric interface: SiO₂-HfO₂", American Physical Society meeting, March 2006.

Publications:

1. O. Sharia, A. A. Demkov, "Growth of Sr layer on top of stepped Si(001) surface", in preparation.
2. O. Sharia, A. A. Demkov, "Simulation of a full gate stack of a CMOS device with HfO₂" in preparation.
3. O. Sharia, K. Tse, J. Robertson, and A. A. Demkov, "How Defects at Metal-Oxide Interfaces modify Adhesion and Band Alignment", in preparation.
4. O. Sharia, A.A. Demkov, G. Bersuker, and B.H. Lee, "The role of Al doping at the SiO₂/HfO₂ interface", will be published in Phys. Rev. B **77** (2008)
5. J. Robertson. O. Sharia, A. A. Demkov, "Fermi level pinning by defects in HfO₂-metal gate stack", Appl. Phys. Lett. **91**, 132912 (2007).
6. O. Sharia, A.A. Demkov, G. Bersuker, and B.H. Lee, "Theoretical study of the insulator/insulator interface: Band alignment at the SiO₂/HfO₂ interface" Phys. Rev. B **75**, 035306 (2007).
7. A.A. Demkov, O. Sharia, X. Luo, J. Lee, "Density functional theory of high-k dielectric gate stacks" Microelectronics Reliability **47**, 683 (2007).
8. A.A. Demkov, O. Sharia, J. Lee, "Theoretical analysis of high-k dielectric gate stacks" Microelectronics Engineering, **84**, 2032 (2007).