

## EDUCATION

- **Ph.D., Physics**, Ohio University, Athens, OH, USA August 2006  
*Thesis: Single molecule switches and molecular self-assembly: Low temperature STM investigations and manipulations*
- **M.S., Physics**, Ohio University, Athens, OH, USA November 2003
- **Dipl. Eng. in Physics**, University of Bucharest, Romania June 2000

## PROFESIONAL EXPERIENCE

- **Postdoctoral Research Associate**, The University of Tennessee, Knoxville, USA 2007-2009
  - Transport studies of ultrathin YSi<sub>2</sub> nanowires
  - Growth of YSi<sub>2</sub> nanowires across nanometer-sized channels milled in silicon
  - Spectroscopy (STS and XPS) of doped TiO<sub>2</sub> nanoparticles

Managed the growth of nanowires in UHV and their characterization by scanning tunneling microscopy/spectroscopy (STM/STS). The wire growth is carried on different substrates: on plain Si and on Si pre-patterned with macroscopic contact electrodes for transport measurements and on substrate having channels for measuring transverse transport across the DNA.

Collaborated with the Center of Nanophase Materials Sciences at Oak Ridge National Laboratory (ORNL) where we have performed the 4-probe STM transport measurements on YSi<sub>2</sub> and with the University of North Carolina at Chapel Hill where the nanowires are contacted by macroscopic electrodes, the channels in Si are milled and the transport across the DNA is studied.

- **Research Assistant**, Ohio University 2001-2006
  - Single atom/molecule manipulation on surfaces at liquid helium temperature.
  - Molecular Kondo Effect
  - Nanobiophysics: Single molecule switch made of Chlorophyll-a from spinach

Conducted low-temperature experiments on single molecules and their self-assembly using a Scanning Tunneling Microscope. Kondo effect is investigated in systems formed by single molecules adsorbed on metallic surfaces. Electronic and structural properties of organic molecules such as chlorophyll-A are determined for future applications in electronic devices.

Involved in the construction of a low temperature scanning tunneling microscope capable of single atom and molecule manipulations (<http://www.phy.ohiou.edu/~hla/>.)

- **Teaching Assistant**, Ohio University 2000-2001  
Led laboratory classes for undergraduate physics college courses

## PUBLICATIONS

1. W. Zhu , X. Qiu, **V. Iancu**, X.-Q. Chen, H. Pan, W. Wang, M. P. Paranthaman, H. H. Weitering, M. Stocks, N. Dimitrijevic, T. Rajh, H. M. Meyer, G. Eres, B. Gu, and Z. Zhang “Bandgap narrowing of titanium oxide semiconductors via non-compensated anion-cation codoping for enhanced visible-light photoactivity” *to appear in Phys. Rev. Lett.* (2009)
2. **V. Iancu**, P. R. C. Kent, C. G. Zeng, and H. H. Weitering, ”Structure of YSi<sub>2</sub> nanowires from tunneling spectroscopy and first principle” *App. Phys. Lett.* **95**, 123107 (2009)
3. F. Jäckel, G. Perera, **V. Iancu**, K. -F. Braun, N. Koch, J.P. Rabe, S.-W. Hla, “Investigating molecular charge transfer complexes with a low temperature scanning tunneling microscope” *Phys. Rev. Lett.* **100**, 126102 (2008).
4. **V. Iancu**, A. Deshpande, and S. -W. Hla, “Manipulation of the Kondo effect via two-dimensional molecular assembly”, *Phys. Rev. Lett.* **97**, 266603 (2006).
5. **V. Iancu** and S. -W. Hla, “Realizing a Four-Step Molecular Switch in Scanning Tunneling Microscope Manipulation of Single Chlorophyll-a Molecules”, *Proc. Nat. Acad. Sci.* **103**, 13718 (2006).
6. G.R. Newkome, P. Wang, C. N. Moorefield, T. J. Cho, P. Mohapatra, S. Li, S-H. Hwang, O. Lukyanova, L. Echegoyen, J. A. Palagallo, **V. Iancu**, S.-W. Hla, “Nanoassembly of a New Class of Fractal Polymers: Synthesis and Structure Proof of a Sierpinski ‘Hexagonal Gasket’, *Science* **312**, 1782 (2006).
7. **V. Iancu**, A. Deshpande, and S. -W. Hla, “Manipulating Kondo Temperature via Single Molecule Switching”, *Nano Lett.* **6**, 820 (2006).
8. **V. Iancu**, A. Deshpande, and S. -W. Hla, “Controlling formation of nanodots and nanocavities using scanning tunneling microscope”, *Proceedings of the 6<sup>th</sup> IEEE conference on nanotechnology*, 2006.
9. K. -F. Braun, **V. Iancu**, N. Pertaya, K. -H. Rieder, and S. -W. Hla, “Decompositional, incommensurate growth of ferrocene molecules on a Au(111) surface”, *Phys. Rev. Lett.* **96**, 246102 (2006).
10. S. -W. Hla, K. -F. Braun, **V. Iancu**, and A. Deshpande “Single-Atom Extraction by Scanning Tunneling Microscope Tip Crash and Nanoscale Surface Engineering”, *Nano Lett.* **4**, 1997 (2004).

## CONFERENCES/PRESENTATIONS

- **V. Iancu**, P.R.C Kent, T.-H. Kim, A.-P Li, L.D. Menard, M. Ramsey and H.H. Weitering “Electronic transport in YSi<sub>2</sub> nanowires”, APS March Meeting 2009, contributed talk.
- **V. Iancu**, C. Zeng, S. Jesse, A.P. Baddorf, and H.H. Weitering “Transport studies on ultrathin silicide nanowires”, APS March Meeting 2008, contributed talk.
- **V. Iancu**, A. Deshpande, S. -W. Hla, “Manipulation of Kondo Effect via Two-Dimensional Molecular Self-Assembly”, APS March Meeting 2007, contributed talk.
- **V. Iancu** and S. -W. Hla “Chlorophyll-a self-assembly: a low temperature STM investigation”, The 2006 Ohio Nanotechnology Summit, contributed poster.
- **V. Iancu**, A. Deshpande, S. -W. Hla “Single molecule Kondo Switch”, APS March Meeting 2006, contributed talk.
- A. Deshpande, **V. Iancu**, S. -W. Hla “Atom selective force measurement with STM”, APS March Meeting 2006, contributed talk
- **V. Iancu**, A. Deshpande, A. Govorov, S. -W. Hla “Kondo physics with organic molecules”, APS March Meeting 2005, contributed talk.

# Violeta Iancu

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- **V. Iancu**, A. Deshpande, S. –W. Hla "Molecular recognition, self-assembly and electronic structure of Co-TBrPP on Cu(111): a LT-STM study", AVS Midwest chapter, June 2004, contributed talk.
- **V. Iancu**, A. Deshpande, S. –W. Hla, "Atomic-scale surface modification and in-situ tip preparation using STM manipulation", APS March Meeting 2003, contributed poster.

## AWARDS/FELLOWSHIPS

- **Best Poster Award**, The 2006 Ohio Nanotechnology Summit April 2006
- **Clippinger Graduate Fellowship**, Ohio University 2004 -2005
- **Merit Award**, University of Bucharest, Romania 1998-2000

## LANGUAGES

- **Romanian**: native language
- **English**: fluent
- **French**: basic

## REFERENCES

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