

Stanislav V. Verkhoturov, PhD

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a. Professional Preparation.

Arifov Institute of Electronics, Tashkent, Uzbekistan (USSR), Physics, Ph.D. 1994

b. Appointments.

2005-present, Research Scientist, Department of Chemistry, Center for Chemical Characterization, Texas A&M University

2010-present, Research Scientist, Material Characterization Facility, Texas A&M University

1997-2005, Associate Research Scientist, Department of Chemistry, Center for Chemical Characterization, Texas A&M University

c. Area of expertise:

EXPERIMENTAL PHYSICS, CHEMISTRY and BIOLOGY:

- Elemental and Chemical Analysis (including trace and isotope analysis) by Secondary Ion Mass-Spectrometry (magnetic prism, quadrupole, ToF mass analysers);
- Depth Profiling of Semiconductors with CAMECA 4-6 F SIMS's;
- Static SIMS with Imaging Capabilities (custom made ToF mass spectrometers with spatial resolution of 600nm);
- Secondary Ions Emission and Sputtering of Clusters from Metal and Semiconductor Surfaces;
- Ion Beam Techniques (Energy Analysis, Ion Optics, Ion Guns);
- Time-of- Flight Method and Coincidence Ion Mass Spectrometry;
- Other Surface Analysis Techniques (Auger Electron Spectroscopy;
- Electron Energy Loss Spectroscopy, X-ray Photoelectron Spectroscopy);
- Ultra High Vacuum Techniques;
- Unimolecular Reactions in Molecular and Cluster Beams;
- Surface Ionization and Scattering of the Hyperthermal Atomic and Molecular Beams;
- Modification and Characterization of Surfaces by MeV/KeV Atom and Cluster Ion Bombardment;
- Fabrication of Free Standing and Self-organized Nano Objects;
- Time of Flight Secondary Ion Mass Spectrometry of Nano-objects for chemical and biological research;
- Desorption of Atom and Molecular Ions Stimulated by Beta Radioactive Decay;

DEVELOPMENT OF ANALYTICAL AND RESEARCH EQUIPMENT

- Design and production of Time-of-Flight Ion Mass-Spectrometers working in event by event mode with detection of coincidentally emitted secondary ions (U.S. Provisional Patent Appln. Serial No 60/417,420 for "Mass Separated Time-Of-Flight Mass Spectrometry");

- Simulation, engineering and production of ion sources: Plasmatron Sources, Alkali Metals, C60 and Liquid Metal Ion Sources (Ag, Cu, Ga, Au);
- Design and engineering of Secondary Ion Mass-Spectrometers based on Magnet Mass-Separation with Double Focusing Optics;
- Design and engineering of Magnetic Mass Spectrometer for Hydrogen/deuterium Isotope Analysis;
- Simulation and engineering of Ion- Probe Microbeam Forming Systems;
- Design and production of Time-of-Flight Ion Mass-Spectrometer for investigation of Desorption Stimulated by Radioactive Decay.

d. Synergistic Activities.

- Member of Bohmische Physical Society
- Expert of INTAS
- Reviewer for Physical Review Letters, Physical Review B

e. Collaborators & Other Affiliations.

- Karen Wooley (*TAMU*)
- Ibrahim Karaman (*TAMU*)
- Andreas A. Polycarpou (*TAMU*)
- Yue Kuo (*TAMU*)
- Serge Della-Negra (*Institute of Nuclear Physics, Orsay, France*)
- Alex Revzin (*UC-Davis*)
- Andrey Kolmakov (*NIST*)
- James Thackeray (*Dow*)
- Peter Trefonas (*Dow*)

f. Publications, presentations and related activity

- Over 100 original papers, numerous proceedings, abstracts and technical reports.
- Co-PI of 5 NSF grant proposals (since 2000)

g. Publications.

List of 5 recent publications:

- Verkhoturov, Stanislav V.; Czerwinski, Bartlomiej; Verkhoturov, Dmitriy S.; Geng, Sheng; Delcorte, Arnaud; Schweikert, Emile A. "Ejection-ionization of molecules from free standing graphene", *J. Chem. Phys.*, **2017**, 146(8), 084308/1-084308/7
- Geng, Sheng; Verkhoturov, Stanislav V.; Eller, Michael J.; Della-Negra, Serge; Schweikert, Emile A. "The collision of a hypervelocity massive projectile with free-standing graphene: Investigation of secondary ion emission and projectile fragmentation", *J. Chem. Phys.*, **2017**, 146(5), 054305/1-054305/9.
- Golunski, M.; Verkhoturov, S. V.; Verkhoturov, D. S.; Schweikert, E. A.; Postawa, Z., "Effect of substrate thickness on ejection of phenylalanine molecules adsorbed on free-standing graphene bombarded by 10 keV C60", *Nuclear Instruments & Methods in Physics Research, Section B.*, **2017**, 393, 13-16.
- Yegin, Cengiz; Nagabandi, Nirup; Feng, Xuhui; King, Charles; Catalano, Massimo; Oh, Jun Kyun; Talib, Ansam J.; Scholar, Ethan A.; Verkhoturov, Stanislav V.; Cagin, Tahir; et

- al, "Metal-Organic-Inorganic Nanocomposite Thermal Interface Materials with Ultralow Thermal Resistances" *ACS Applied Materials & Interfaces*, **2017**, 9(11), 10120-10127.
- Parviz, Dorsa; Yu, Ziniu; Verkhoturov, Stanislav; Green, Micah J.; Hedden, Ronald C,
 - "Gradient Films of Pristine Graphene/Pyrene-Functional Copolymers with Janus Electrical Properties", *ACS Applied Materials & Interfaces* **2016**, 8(46), 31813-31821.

List of 5 other significant publications

- Eller, Michael J.; Verkhoturov, Stanislav V.; Schweikert, Emile A. "Testing Molecular Homogeneity at the Nanoscale with Massive Cluster Secondary Ion Mass Spectrometry", *Analytical Chemistry*, **2016**, 88(15), 7639-7646.
- Verkhoturov, Stanislav V.; Geng, Sheng; Czerwinski, Bartlomiej; Young, Amanda E.; Delcorte, Arnaud; Schweikert, Emile A. "Single impacts of keV fullerene ions on free standing graphene: Emission of ions and electrons from confined volume", *J. Chem. Phys.*, **2015**, 143, 164302.
- Jacob, Clement; Jian, Jie; Su, Qing; Verkhoturov, Stanislav; Guillemette, Renald; Wang, Haiyan "Electrochemical and Structural Effects of In Situ Li₂O Extraction from Li₂MnO₃ for Li-Ion Batteries", *Applied Materials & Interfaces*, **2015**, 7(4), 2433-2438.
- Liang, C.K.; Eller, M. J.; Verkhoturov, S. V.; Schweikert, Emile A., "Mass Spectrometry of Nanoparticles is Different", *Journal of the American Society for Mass Spectrometry*, **2015**, 26(8), 1259-1265.
- Sun, G.; Cho, S.; Yang, F.; He, X.; Pavia-Sanders, A.; Clark, C.; Raymond, J. E.; Verkhoturov, S. V.; Schweikert, E. A.; Thackeray, J. W.; Trefonas, P.; Wooley, K. L. "Advanced Photoresist Technologies by Intricate Molecular Brush Architectures: Diblock brush terpolymer-based positive-tone photoresist materials", *J. Polym. Sci., Part A: Polym. Chem.*, **2015**, 53, 193-199.