

ANATOLI KORIKIN

| Anatoli.Korikin@asu.edu; korikin@nanoandgiga.com

<http://www.nanoandgiga.com/~korikin/> | <https://isearch.asu.edu/profile/1169125>

Focused, results-oriented **International Project Manager /Senior Researcher/ Consultant** in technology innovations, materials science and education. Background as a computational chemist, materials scientist, and international project manager with extensive experience in academic and industrial research. Strengths include technical skills, international team leadership, and business development experience with technology startups, conferences, and workshops. Conducted studies in process and material design for advanced microelectronics, high-energy density materials, physical chemistry of main group and transition elements, biologically active materials, and photo biosensors. Published 100+ research articles and reviews, edited 16 books and journal issues, presented many invited papers at the conferences, schools, and workshops. Fluent in Russian, English, and German; basic knowledge of French. *Core competencies include:*

Technical: Computational and Physical Chemistry with Applications in Microelectronics | High Energy Materials (Rocket Propellants, Explosives and Metastable Compounds) | Gas and Solid State Chemistry | Main Group and Transition Elements Chemistry | Biologically Active Molecules and Biosensors

Business: Project Management (Educational, Research, and Commercialization Projects) | Business Development | Team Building | Strategy Development | Technical Due Diligence | Event Organizing

KEY EXPERIENCE

Industrial Experience

Conducted senior-level research and project management in modeling/simulation of the mechanism and kinetics of chemical vapor deposition (ALD and CVD), including structure, stability, and electronic properties of advanced electronic materials, thin films, interfaces, and electronic devices. Worked jointly with Motorola and external contractor teams, supervised two groups of contractors in Russia.

Developed mechanism and kinetics of ALD and CVD of Si₃N₄, SiO_xN_y (silicon oxynitride), TiN, ZrO₂, HfO₂, and Al₂O₃, used by DigitalDNA Lab engineers to design and optimize process and chemical reactors.

- Created two commercial software packages, Khimera (mechanism and chemical kinetics) and Sage MD (atomic scale material design and molecular dynamics), for general use in material and process design.
- Designed novel process for vapor jet Al₂O₃ deposition to obtain H-, C-, and Cl-free aluminum oxide films for gate oxide and passive device applications.
- Obtained \$10M+ external funding from U.S. government and European commission.

Consulting and Entrepreneurial Experience

Founded and led consulting company, Nano and Giga Solutions, Inc, for 10 years, providing services in education, research, and high-tech business development in materials and device design.

- Conducted six international conferences in nanoelectronics, photonics, and renewable energy (Nano & Giga forums), leading to publication of six books and 10 special issues of professional international journals. Conferences were attended by world leading scientists, Nobel laureates, and high-level government officials.
- Developed modeling strategy and hired personnel for Li-battery startup company, Nanoexa, creating scientific and industrial innovations required to design and manufacture advanced battery materials and battery systems. Successfully fundraised and led IPO stages, negotiating licensing technology with large international enterprises.
- Created professional social network for know-how trade and development, IPTOOR.com, a joint venture with leading Russian software company, Teleformis IS. Portal aims to reproduce in the Internet social media environment the type of relationships people build while creating new enterprises, including know-how development and trade. Project is in the beta testing stage and targets millions of entrepreneurs around the world.

- Co-founded American-Russian Chamber of Commerce of Minnesota. a nonprofit, non-political organization organized to promote trade and commerce between the United States, Russia, and Russian-speaking communities and organizations across the world.

Academic Project Development and Management

Adjunct research professor and project manager.

- Jointly, with Professor Stephen Goodnick, organized Arizona Institute for Renewable Energy to coordinate education, research, and technology innovations in various fields of alternative energy – biofuel, photovoltaic, and energy storage – to enhance ASU leadership and funding. ASU obtained multi-million dollar funding and created centers in artificial photosynthesis and photovoltaics.
- Initiated and led organization of Russian Science Technology and Education Consortia (RUSTEC) at Arizona State University to establish collaboration with leading Russian universities and research centers. Several hundred Russian professors and graduate students had training at ASU and several groups established productive research collaboration.
- Jointly, with Director of Center of Innovations In Medicine at Biodesign Institute of Arizona State University, initiated organization of Russian-American Anti-Cancer Center (RAACC) in Barnaul. RAACC is currently applying for major funding in Russia. Advanced technology in early cancer diagnostics developed at ASU was transferred to RAACC for research and subsequent commercialization in Russia.
- As the editor-in-chief led the first year development of the new international journal “Resource-Efficient Technologies” owned by Tomsk Polytechnic University and published by Elsevier. Gathered the team of associate editors and international advisers and developed logistics of reviewing and publishing.

Academic Experience

Computational chemist and material scientist with experience in biological, semiconductor, and high energy materials. Conducted research at Russian (USSR) Academy of Sciences, University of Erlangen Nurnberg and Max-Planck Institute (Germany), Dalhousie University – Halifax (Canada), University of Florida, and University of Tokyo (Japan).

Published 100+ research and reviewed papers in peer-reviewed international journals/books, edited 16 books and special journal issues, and presented at many invited talks at international conferences and seminars, editor-in-chief of Resource-Efficient Technologies journal (hosted by Elsevier).

PROFESSIONAL APPOINTMENTS

ARIZONA STATE UNIVERSITY, Tempe, Arizona 2007 – Present

Associate Research Professor (2007-2015) and **Adjunct Professor** (present)

Director – Russian Science, Technology, and Education Consortia (RUSTEC) Initiative

Current Projects

- Development of Russian Science Technology and Education Center (RUSTEC);

Past Projects:

- Organization of an international workshop on on-line education;
- Development of Arizona Initiative for Renewable Energy;
- Organization of training short term courses for Russian universities.

NANO & GIGA SOLUTIONS (<http://nanoandgiga.com/>), Gilbert, Arizona

2003 – Present

President

Play key role in running an independent consulting company that provides services in education, research, and high-tech business development in materials and device design. Offers include consulting, research, software and business development in computational materials design, semiconductors, and bio and nanotechnology.

Current Projects

- Educational web portal in atomic scale materials design (ASDN.NET).
- Conference series “Nano & Giga Forum”.
- Consulting in international projects in education, science, and innovations.

Selected Past Projects

- US-Russian workshop on advanced materials design, including education research and technology innovations (Kazan, Russian Federation, October 2013).
- Nano and Giga Challenges in Electronics, Photonics, and Renewable Energy (international conferences) – NGCM2002, NGCM2004, NGC2007, NGC2009, NGC2011, NGC2014 and NGC2017.
- Atomic scale modeling of Si-SiO₂ interface for future electronic devices in collaboration with SEMATECH International (Dr. G. Bersuker), University of Florida (Prof. R.J. Bartlett), and Tyndall National Institute, Ireland (Dr. J. Greer);
- Atomic scale modeling of high-k dielectric materials and interfaces in collaboration with SEMATECH International (Dr. H. Huff, Dr. G. Bersuker) and University of Tokyo (Prof. Koichi Yamashita);
- Team and strategy building for a start-up company NanoeXa (Li-batteries design) in Bay Area.
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- RESOURCE-EFFICIENT TECHNOLOGIES JOURNAL (Owned by Tomsk Polytechnic University and hosted by Elsevier) 2015- 2016
- **Editor-in-chief**
- *Resource-Efficient Technologies* publishes research and review articles, short communications, commentaries, and book reviews in the ever broadening field of sustainable and resource-efficient technologies, which reduce energy and materials consumption, reduce or completely eliminate toxic waste, develop closed-loop recycling technologies with the purpose of sustainable, economically efficient and socially responsible use of all natural resources and man-made products.

DIGITALDNA LABS, MOTOROLA, INC., Tempe, Arizona 1997 – 2003

Project Manager and Senior Research Scientist (Staff Engineer)

Conducted research and project management in modeling/simulation of mechanism and kinetics of chemical vapor deposition (ALD and CVD) as well as structure, stability, and electronic properties of advanced electronic materials, thin films, interfaces, and electronic devices. Worked jointly with Motorola and external teams, supervised two groups of contractors in Russia, and published 28 papers in international peer-reviewed journals.

- Developed mechanism and kinetics of ALD and CVD of Si₃N₄, SiO_xN_y (silicon oxinitride), TiN, ZrO₂, HfO₂, and Al₂O₃ used by DigitalDNA Lab engineers to design/optimize process and chemical reactors;
- Created two commercial software packages, Khimera (mechanism and chemical kinetics) and Sage MD (atomic scale material design and molecular dynamics), for general use in material and process design.
- Spearheaded novel process design for vapor jet Al₂O₃ deposition to obtain H-, C-, and Cl-free aluminum oxide films for gate oxide and passive device applications.

UNIVERSITY OF FLORIDA, Gainesville, Florida 1995 – 1997

Research Associate – Prof. Rodney J. Bartlett Group, Quantum Theory Project

Conducted quantum chemical studies of processes and materials, such as high energy density materials (HEDM) and metastable molecules.

MAX-PLANCK INSTITUT FÜR STRAHLEN-CHEMIE, Mülheim/Ruhr, Germany 1993 – 1995

Research Fellow – Prof. Kurt Schaffner Group

Applied molecular modeling and simulation to study biologically active oligopyrroles. Conducted vibrational analyses of phytochrome's chromophore and model species.

FRIEDRICH-ALEXANDER UNIVERSITY OF ERLANGEN-NURNBERG, Erlangen, Germany 1991 – 1993

Alexander-von-Humboldt Fellow – Prof. P.v.R. Schleyer Group

Studied energies in carbon and silicon molecules and structure-property correlations in a series of molecules.

RUSSIAN ACADEMY OF SCIENCES, Moscow, Russia 1981 – 1991

Senior Researcher – Institute of Physiologically Active Substances

Studied orbital models of hypervalent and low coordinated phosphorus, silicon, and sulfur compounds.

EDUCATION

MOSCOW LOMONOSOV STATE UNIVERSITY, Moscow, Russia

Ph.D. in Physics

MOSCOW MENDELEEV TECHNICAL UNIVERSITY, Moscow, Russia

M.S. in Chemistry