Yogesh Tiwary

R&D Scientist at The Dow Chemical Company, USA

Collegeville, PA - Email me on Indeed: indeed.com/r/Yogesh-Tiwary/4c607a35acae805e

WORK EXPERIENCE

Associate Research Scientist and Manager

The Dow Chemical Company - Collegeville, PA - June 2010 to Present

Responsibilities: Research and development of novel water-based emulsion polymers for coatings industry. As an R&D project team leader, my job functions include inventing, developing, and commercializing new technologies, and mentoring new scientists. I am also involved in introducing new technologies and products to global Dow technical/sales service teams and global customers.

Skills:

- Certified six-sigma green belt project leader (presently pursuing black-belt certification)
- Polymer design to meet target performance.
- Design of experiment, coatings formulation and testing, modeling, and statistical data analysis.

Achievements:

- Development and commercialization of EVOQUETM Pre-Composite Polymer Technology to enhance TiO2 scattering efficiency in coatings and reducing carbon footprint.
- Developed seven EVOQUE products for global markets.
- One granted and four filed patents on emulsion polymer technologies.

Post-doctoral Research Fellow

Fritz-Haber-Institute - Berlin - January 2010 to June 2010

Responsibilities: Research on understanding GaAs bulk and surfaces using atomic-scale computer modeling and simulations. I developed new techniques to accelerate molecular dynamics simulations.

Skills: Modeling and simulation, statistical mechanics, molecular dynamics, programming, Matlab, etc.

Achievements: One journal publication.

Research Assistant

The Pennsylvania State University - University Park, PA - January 2006 to December 2009

Responsibilities: Research on understanding, predicting, and controlling atomic self assembly of nano-structures during thin-film deposition. I performed quantum-mechanical calculations and developed a 3D kinetic Monte Carlo model to simulate and tune self assembly using innovative processing, which could be utilized in applications such as microelectronics, catalysis, quantum computing, etc.

Skills: Quantum mechanics, Kinetic Monte Carlo, programming, Matlab, etc.

Achievements: Seven journal publications and eight conference presentations.

Process Engineer

Fairchild Semiconductor - Mountaintop, PA, USA - January 2008 to August 2008

Responsibilities: Process development using chemical vapor deposition for semiconductor manufacturing (MOSFET and photovoltaic)

Skills: Operating and developing processes for equipments including Novellus' Concept-I/II and SPEED Plasma CVD systems, KOKUSAI and TEL's LP-CVD systems, X-ray fluorescence spectrometer, etc.

Research Assistant

The University of Virginia - Charlottesville, VA - August 2003 to August 2005

Responsibilities: Research on mathematical modeling and simulation of pitting corrosion of stainless steel. I developed a spatiotemporal reaction-diffusion model to explain sudden onset of pitting corrosion on stainless steel, and investigated factors that influence that.

Skills: Electrochemistry, programming, mathematical modeling, numerical method, statistics, and Matlab.

Achievements: Two journal publications.

EDUCATION

PhD in Chemical Engineering (Major), Computational Science (Minor)

The Pennsylvania State University - University Park, PA
2006 to 2009

Master of Science in Chemical Engineering

The University of Virginia - Charlottesville, VA
2003 to 2005

Bachelor of Technology in Chemical Engineering

Indian Institute of Technology (BHU), Varanasi - Varanasi, Uttar Pradesh
1999 to 2003

SKILLS

Product development, Project management, Polymers R&D, Scientific Research, Modeling and Simulation

ADDITIONAL INFORMATION

AWARDS:

• Presidential Green Chemistry Challenge Award – 2013, for the EVOQUETM Pre-Composite Polymer technology (awarded by U.S. Environmental Protection Agency to five chemical technologies across the nation).
• R&D 100 award from R&D Magazine – 2013, for the EVOQUETM Pre-Composite Polymer technology (awarded to 100 most technologically significant products introduced into the marketplace that year).
• Dow Technology Innovation Award – 2013.
• Received four DOW internal appreciation awards for technology development and project leadership.
• University Graduate Fellowship Award - 2008, Pennsylvania State University (awarded to five graduate students from College of Engineering).
• Best Research Presentation Award, Chemical Engineering Symposium - 2008, Pennsylvania State University.
• Graduate Fellowship […] Department of Chemical Engineering, University of Virginia.

JOURNAL PUBLICATIONS (more than 100 citations):

1) Y. Tiwary and K. A. Fichthorn, “Predicting and controlling self-assembly in Al(110) homoepitaxial growth”, to be published.

2) Y. Tiwary and K. A. Fichthorn, “A first-principles study of oxygen adsorption and interaction with Al adatoms on Al(110)”, Surface Science 605, 1388 (2011).

3) K. A. Fichthorn, Y. Tiwary, T. Hammerschmidt, P. Kratzer, and M. Scheffler, “An analytic many-body potential for GaAs(001) homoepitaxy: Bulk and surface properties”, Phys. Rev. B 83, 195328 (2011).

4) J. D. Howe, P. Bhopale, Y. Tiwary, and K. A. Fichthorn, “Patterns in strained-layer heteroepitaxy: Beyond the Frenkel-Kontorova model”, Phys. Rev. B 81, […] (2010).

5) Y. Tiwary and K. A. Fichthorn, “Mechanisms of atomic diffusion on the flat, stepped, and facetted surfaces of Al(110)”, Phys. Rev. B 81, 195421 (2010).

6) K. A. Fichthorn, R. A. Miron, Y. Wang and Y. Tiwary, “Accelerated molecular dynamics of thin-film growth with the Bond-Boost method”, J. Phys. Condens. Matter 21, 084212 (2009).

7) Y. Tiwary and K. A. Fichthorn, “Connector model for describing many-body interactions at surfaces”, Phys. Rev. B 78, 205418 (2008).

8) J. R. Scully, N. D. Budiansky, Y. Tiwary, A. S. Mikhailov, J. L. Hudson, “An alternate explanation for the abrupt current increase at the pitting potential”, Corrosion Science 50, 316 (2008).

9) Y. Tiwary and K. A. Fichthorn, “Interactions between Al atoms on Al(110) from first-principles calculations”, Phys. Rev. B 75, 235451 (2007).

10) L. Organ, Y. Tiwary, J. R. Scully, A. S. Mikhailov, and J. L. Hudson, “Interactions among metastable pits on heterogeneous electrodes”, Electrochimica Acta 52, 6784 (2007).

CONFERENCE TALKS:

1) “Controlling Self-Assembly in Al(110) Homoepitaxy”, American Physical Society Meeting, Portland, OR, March 2010.

2) “Predicting and controlling self-assembly in Al(110) homoepitaxial growth”, American Institute of Chemical Engineers Annual Meeting, Nashville, TN, Nov 2009.

3) “The influence of oxygen impurities on the formation of self-assembled nanostructures in Al/Al(110) homoepitaxy”, American Vacuum Society International Symposium & Exhibition, Boston, MA, Oct 2008.

4) “Connector Model for many-body interactions at surfaces from first principles”, American Physical Society Meeting, New Orleans, LA, March 2008.

5) “Quantum dots on Al(110): new lattice models for thin-film growth based on first principles”, American Institute of Chemical Engineers Annual Meeting, Salt Lake city, UT, Nov 2007.

6) "Ab initio calculation of atomic interactions on Al(110): implications for epitaxial growth”, American Physical Society Meeting, Denver, CO, March 2007.

7) "Multi-scale simulation of quantum dot formation in Al/Al (110) homoepitaxy", American Physical Society Meeting, Denver, CO, March 2007.

8) “Multi-scale simulation of quantum dot formation in metal thin-film epitaxy”, American Institute of Chemical Engineers Annual Meeting, San Francisco, CA, Nov 2006.

MISCELLANEOUS INFORMATION:

- Permanent resident (green card holder) of USA, approved under “Outstanding Researcher” category.
- Citizen of India.
- Fluent in English and Hindi.