

Venkata Pradeep Indrakanti

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Education

- **The Pennsylvania State University (Penn State)** University Park, PA
Ph.D. in Energy and Geo-Environmental Eng. Sep. 2003 - expected Dec. 2008
 - Thesis advisors: Prof. Harold Schobert and Prof. James Kubicki
 - GPA 4.00/4.00
- **National Institute of Technology (NIT)** Tiruchirapalli, India
B.Tech. in Chemical Eng. June 1998 - June 2002
 - GPA 3.68/4.00

Research & Experience

- **Dept. of Energy and Mineral Eng., Penn State** University Park, PA
Research Assistant Sep. 2003 - present
 - Correlated the formation of different carbonate species on anatase (101), (010) and (001) surfaces to the relative acid-base strength of atoms on these surfaces, using density functional theory (DFT) calculations.
 - Developed a model for the initial steps of CO₂ activation on irradiated TiO₂ surfaces using DFT and post-Hartree-Fock calculations.
 - Synthesized 0-2.5 w/w% lanthanide-doped TiO₂ semiconductor photocatalysts to convert CO₂ to useful compounds such as methane.
 - Characterized surface electron and hole-trapping centers on sol-gel TiO₂ catalysts using EPR spectroscopy.
 - My research has resulted in 1 paper (accepted for publication), (2 more under preparation), 4 conference preprints and 4 oral presentations.
- **Dept. of Energy and Mineral Eng., Penn State** University Park, PA
Teaching Assistant Sep. 2006 - May 2007
 - General education course on energy conservation and environmental protection: Managed the queries, grading and schedule of a class of 170 students.
- **ACC Ltd.** Wadi Cement Works, India
Assistant Process Manager Sep. 2002 - Feb. 2003
 - Evaluated the technical feasibility of various energy saving measures such as the use of waste heat from the cooler to dry pond fly ash.
 - Measured kiln, cooler and superheater performances for an ongoing energy consumption optimization study.
- **National Chemical Laboratory (NCL)** Pune, India
Intern May 2002 - Sep. 2002
 - Evaluated the performance of polymer electrolyte membranes (PEM) for fuel cell applications using electrochemical techniques.
 - Supervisor: Dr.K. Vijayamohanan
- **Indian Institute of Technology (IIT)** Kanpur, India
Summer Research Fellow, Supervisor: Dr. Ashutosh Sharma May 2001 - Jul. 2001
 - Developed a correlation between a thin film's equilibrium thickness and the wavelength of perturbations using Fortran 77.

Skills

- Computational
 - DFT/semi-empirical calculations using Gaussian 03, Turbomole, MSINDO.
 - Mathematical modeling in MATLAB and Mathematica.
 - Scientific programming in C, C++ and Fortran.
 - Life cycle impact assessments of conventional and alternative energy conversion technologies
- Experimental
 - Metal oxide catalyst synthesis.
 - Familiarity with co-precipitation and solid-state methods for preparing mixed metal oxide catalysts
 - Catalyst characterization using EPR, XRD and UV-vis spectroscopies.

Honors

- ACS Thematic Program Travel Grant, American Chemical Society, 2008
- EMS Centennial Graduate Research Award, College of Earth and Mineral Sciences, Penn State, 2007.
- Summer Fellow, Center for Environmental Chemistry and Geochemistry, Penn State, 2007.
- Anne C. Wilson Graduate Research Award, College of Earth and Mineral Sciences, Penn State, 2003.
- Graduate Fellowship Award, Penn State, 2003.
- Best Outgoing Student of Chemical Engineering award, NIT Tiruchirapalli, India, 2002.
- Summer research fellowship, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), India, 2001.

Publications & preprints

- V.P. Indrakanti, J.D. Kubicki, H.H. Schobert, “Quantum chemical modeling of ground states of CO₂ chemisorbed on anatase (001), (010) and (101) TiO₂ surfaces”, accepted for publication in Energy and Fuels.
- V.P. Indrakanti, J.D. Kubicki, H.H. Schobert, “Can CO₂ be photoreduced at defect-free anatase TiO₂ surfaces?” , in preparation, expected publication in 2008.
- V.P. Indrakanti, J.D. Kubicki, H.H. Schobert, “CO₂ photoreduction at bridging oxygen vacancies on anatase TiO₂ surfaces”, in preparation, expected publication in 2008.
- N. Soundarrajan, V. Dhar, V.P. Indrakanti, P. Naredi, N. Reed, D. Van Niekerk, “Problem-based learning approaches in a design engineering class: graduate student perspectives”, Preprints - American Chemical Society, Division of Petroleum Chemistry 2008, 53, (1), 103-105.
- V.P. Indrakanti, J.D. Kubicki, A.V. Mitin, H.H. Schobert, “Nature of excited states of carbonate-like species on (010) anatase TiO₂: preliminary symmetry-adapted cluster-configuration interaction calculations”, Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry 2008, 53, (1), 208-210.
- V.P. Indrakanti, J.D. Kubicki, A.V. Mitin, H.H. Schobert, “Photoreduction of CO₂ on titania: quantum chemical calculations and experimental studies”, Preprints of Symposia - American Chemical Society, Division of Fuel Chemistry 2008, 53, (1), 333-334.

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- V.P. Indrakanti, M.M. Maroto-Valer, J.D. Kubicki, H.H. Schobert, “Theoretical and experimental studies of CO₂ photoreduction on titania”, 2007 International Conference on Coal Science and Technology, August 2007, Nottingham, UK.

Oral & poster presentations

- V.P. Indrakanti, M.M. Maroto-Valer, J.D. Kubicki, H.H. Schobert, “Computational and experimental Studies of CO₂ photocatalytic reduction on undoped and lanthanide-doped titania”, International Conferences on Carbon Dioxide Utilization (ICCDU-IX), July 2007, Kingston, Canada.
- V.P. Indrakanti, J.D.Kubicki, H.H. Schobert, “Computational studies of CO₂ photoreduction on titania - formation of carbonate radicals”, 2007 Environmental Chemistry Student Symposium, April 2007, University Park, PA, USA.
- V.P. Indrakanti, M.M. Maroto-Valer, “Photoreduction of CO₂ with rare earth supported zeolites”, poster presented at ACS-PRF Summer School on Green Chemistry, 2004, Pittsburgh, PA, USA.

Activities

- Member, American Chemical Society (ACS)
- Judged 12 student research posters for the Graduate Exhibition, The Pennsylvania State University, University Park, 2007.
- Served as a student session chair during the College of Engineering Research Symposium (CERS), University Park, 2007.
- Organizer for the Association for India’s Development (AID) food fest, University Park, 2006.
- Reviewed a scientific journal publication for Fuel Processing Technology, 2004.
- Composed and conducted quizzes for Alchemy 2001 student symposium, India.

References

- Available upon request