

## **Nivaldo Jose Tro**

Department of Chemistry  
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### **Education**

- University of California, Berkeley, Post-Doctoral Research, 1990 Advisor: Charles B. Harris
- Stanford University, Stanford, California, Ph.D. in Chemistry, September 1989. Advisor: Steven George
- Westmont College, Santa Barbara, California, B.A. in Chemistry, Magna Cum Laude, May, 1985.
- Culver City High School, Culver City, California, June 1981

### **Professional Experience**

- Chair, Department of Chemistry, Westmont College, July 2007 – Present
- Professor: Department of Chemistry, Westmont College, October 2001 – Present
- Associate Professor: Department of Chemistry, Westmont College, August 1995 – October 2001
- Visiting Professor: Department of Chemistry, Pepperdine University, August 1998 - April 1999
- Assistant Professor: Department of Chemistry, Westmont College, August 1990 - August 1995
- University of California President's Fellow: Postdoctoral Research with Charles B. Harris, Department of Chemistry, University of California, Berkeley, September 1989 - July 1990.
- NSF Graduate Fellow: Research with Steven M. George, Department of Chemistry, Stanford University, June 1986 - June 1989.

### **Professional Affiliation**

- American Chemical Society, member, Physical Chemistry Division.
- Council on Undergraduate Research, member, Chemistry Division
- Phi Kappa Phi Honor Society, member
- Westmont Liberal Arts Institute, member, Advisory Board

## **Fellowships and Awards**

- Westmont College Outstanding Teacher of the Year, May 2008
- Westmont College Outstanding Teacher of the Year, May 2001
- Westmont College Faculty Research Award, May 1996
- Westmont College Outstanding Teacher of the Year, May 1994
- University of California President's Fellow, September 1989 - July 1990
- NSF Graduate Research Fellow, June 1986 - June 1989
- Graduated Magna Cum Laude, Westmont College
- Outstanding Senior in Chemistry Award, Westmont College

## **Funded Research Proposals**

- Research Corporation: Cottrell College Science Grant (# C-2996) "Laser Induced Photochemistry of Mo(CO)<sub>6</sub> adsorbed on single crystal Al<sub>2</sub>O<sub>3</sub> surfaces" December 1990 - December 1992, Funded \$33,000
- American Chemical Society: Petroleum Research Fund Type G (# 23640-GB5) "Investigation of Photochemistry in Surface Adsorbed Metal Carbonyl Compounds using FTIR and Infrared Laser Spectroscopy" February 1991 - February 1993, Funded \$18,000
- National Science Foundation: MRI Planning Grant (# RII-9014505) February 1991 - February 1992, Funded \$7,860
- Research Corporation: Cottrell College Science Grant, "Desorption Kinetics and Orientation of Alkanes Adsorbed on Al<sub>2</sub>O<sub>3</sub> (0001)" December 1993 - December 1995, Funded \$29,641
- American Chemical Society: Petroleum Research Fund Type B (#28048-B5) "Adlayer Structure and Desorption Kinetics of Alkanes Adsorbed on Al<sub>2</sub>O<sub>3</sub>(0001)" January 1994 - August 1996, Funded \$25,000
- National Science Foundation RUI (#CHE-9510153) "Photoisomerization of Trans-Stilbene Adsorbed on Dielectric Surfaces" July 1995 - March 1998, Funded \$128,000
- American Chemical Society: Petroleum Research Fund Type B (#33524-B) "Isothermal Study of the Desorption Kinetics of Several Adsorbates on Al<sub>2</sub>O<sub>3</sub>(0001)" July 1998 - July 2000, Funded \$30,000

## **Publications: Professional Articles**

1. N.J. Tro, K.A. Martin, K.E. Low and A.M. Nishimura, "Localized States in Dichloronaphthalene Crystals", Journal of Photochemistry 32,303 (1986).
2. I.B. Searway, N.J. Tro, K.A. Martin and A.M. Nishimura, "Dephasing of Electron Spin Echo in The Triplet State of Orientationally Disordered Crystals", Mol. Cryst. Liq. Cryst. 140, 195 (1986).
3. N.J. Tro, J.J. Tro, D.F. Marten and A.M. Nishimura, "External Spin-Orbit Coupling on the <sup>3</sup>n,p\* of Several Cycloalkanones", Journal of Photochemistry 36, 141 (1987).
4. N.J. Tro, A.M. Nishimura and S.M. George, "Summary Abstract: Interactions and Electronic Energy Transfer Between Molecules on Dielectric Surfaces: Phenanthrene on Al<sub>2</sub>O<sub>3</sub>(1120)", Journal of Vacuum Science and Technology A6, 852 (1988).

5. N.J. Tro and S.M. George, "Temperature-Programmed Spectroscopy for Surface Kinetic Analysis: Absorption and Laser-Induced Fluorescence Techniques", *Surface Science* 197, L246 (1988).
6. N.J. Tro, D.A. Arthur and S.M. George, "Infrared Resonant Desorption of Butane from Al<sub>2</sub>O<sub>3</sub> (1120): Evidence for an Ordered Adlayer from Vibrational Mode Selectivity", *Journal of Chemical Physics* 90, 3389 (1989).
7. N.J. Tro, A.M. Nishimura and S.M. George, "Disorder-Order Transition and Energy Transfer in Phenanthrene Adlayers on Al<sub>2</sub>O<sub>3</sub>(1120)", *Journal of Physical Chemistry* 93, 3276 (1989).
8. N.J. Tro, A.M. Nishimura, D.R. Haynes and S.M. George, "Surface Nucleation in the Crystallization Kinetics of Phenanthrene Multilayers on Al<sub>2</sub>O<sub>3</sub>(1120)", *Surface Science* 207, L961 (1989).
9. N.J. Tro and S.M. George, "Infrared Free Electron Laser as a Probe of Vibrational Dynamics on Surfaces", *The Journal of the Optical Society of America* 6, 995 (1989).
10. N.J. Tro, D.R. Haynes, A.M. Nishimura, S.M. George, "Photophysics and Spectroscopy of Surface Adlayers: Pyrene on Al<sub>2</sub>O<sub>3</sub>(1120)", *SPIE, Photochemistry in Thin Films* 1056, 175 (1989).
11. N.J. Tro, D.R. Haynes, A.M. Nishimura and S.M. George, "Coverage-Dependent Electronic Absorption Spectrum of Pyrene on Al<sub>2</sub>O<sub>3</sub>(1120)", *Chemical Physics Letters* 159, 588 (1989).
12. N.J. Tro, D.R. Haynes, A.M. Nishimura and S.M. George, "Desorption Kinetics and Excimer Formation of Pyrene on Al<sub>2</sub>O<sub>3</sub>(1120)", *Journal of Chemical Physics* 91, 5778 (1989).
13. D.R. Haynes, K.R. Helwig, N.J. Tro, and S.M. George, "Fluorescence Quenching of the Phenanthrene Excimer on Al<sub>2</sub>O<sub>3</sub>(0001): Coverage and Distance Dependence", *Journal of Chemical Physics* 93, 2836 (1990)
14. D.R. Haynes, K.R. Helwig, N.J. Tro, and S.M. George, "Coverage-Dependent Electronic Absorption Spectrum of Phenanthrene on Al<sub>2</sub>O<sub>3</sub>(0001) and Butane Multilayer Surfaces", *The Journal of Physical Chemistry* 95, 839 (1991)
15. D.R. Haynes, N.J. Tro and S.M. George, "Condensation and Evaporation of Water from Ice Surfaces", *The Journal of Physical Chemistry* 96, 8503, (1992)
16. \* C.M. Aubuchon, B.S. Davison, A.M. Nishimura and N.J. Tro, "Desorption Kinetics and Adlayer Structure of n-Pentane adsorbed on Al<sub>2</sub>O<sub>3</sub>(0001)" *The Journal of Physical Chemistry* 98, 240 (1994)
17. N.J. Tro, J.C. King and C.B. Harris, Ultrafast Studies of Metal-Metal Bond Cleavage in Fe<sub>3</sub>(CO)<sub>12</sub>, *Inorganica Chimica Acta*.229, 469 (1995)
18. \* R.M. Slayton, C.M. Aubuchon, T.L. Camis, A.R. Noble, and N.J. Tro, "Desorption Kinetics and Adlayer Sticking Model of Several n-Alkanes Adsorbed on Al<sub>2</sub>O<sub>3</sub>(0001)" *The Journal of Physical Chemistry* 99, 2151 (1995)
19. \* R.M. Slayton, N.R. Franklin, and N.J. Tro, "Photochemistry of trans-Stilbene Adsorbed on Al<sub>2</sub>O<sub>3</sub>(0001)" *The Journal of Physical Chemistry* 100, 15551 (1996)
20. \* S.Y. Nishimura, R.F. Gibbons, and N.J. Tro "Desorption Kinetics of Methanol from Al<sub>2</sub>O<sub>3</sub>(0001) Studied using Temperature Programmed Desorption and Isothermal Desorption" *The Journal of Physical Chemistry* 102, 6831 (1998)

- 21.\* S.Y. Nishimura, D.N. Aldrich, M.T. Hoerth, C.J. Ralston, and N.J. Tro, "Photochemistry of CH<sub>3</sub>I adsorbed on Al<sub>2</sub>O<sub>3</sub>(0001)" *The Journal of Physical Chemistry B* 103, 9717 (1999)
  22. N.J. Tro, "Chemistry as General Education" *Journal of Chemical Education* 81 (1), 54 (2004)
  24. N. J. Tro, "Retire the Hybrid Atomic Orbital? Not So Fast" *Journal of Chemical Education*, *J. Chem. Educ.*, 89 (5), 567 (2012)
- ( \* indicates undergraduate student co-authorship)

### **Pulications: Books**

1. N.J. Tro, *Chemistry in Focus: A Molecular View or Our World* (Brooks-Cole Publishing, Pacific Grove, California), 1998
2. N. J. Tro, *Chemistry in Focus: A Molecular View or Our World*, Second Edition, (Brooks-Cole Publishing, Pacific Grove, California), 2001
3. N.J. Tro, *Introductory Chemistry* (Prentice-Hall, Upper Saddle River, New Jersey), 2003
4. N.J. Tro, *Introductory Chemistry*, Second Edition (Prentice-Hall, Upper Saddle River, New Jersey), 2005
5. N.J.Tro, *Chemistry in Focus: A Molecular View or Our World*, Third Edition, (Brooks-Cole Publishing, Pacific Grove, California), 2006
6. N.J. Tro, *General Chemistry: A Molecular Approach*, (Prentice Hall, Upper Saddle River, New Jersey), January 2007
7. N.J. Tro, *Introductory Chemistry*, Third Edition (Prentice-Hall, Upper Saddle River, New Jersey), January, 2008
8. N.J.Tro, *Chemistry in Focus: A Molecular View or Our World*, Fourth Edition, (Brooks-Cole Publishing, Pacific Grove, California), 2009
9. N.J. Tro, *Principles of General Chemistry: A Molecular Approach*, (Prentice Hall, Upper Saddle River, New Jersey), January 2009
10. N.J. Tro, *General Chemistry: A Molecular Approach*, Second Edition (Prentice Hall, Upper Saddle River, New Jersey), January 2010
11. N.J. Tro, *Introductory Chemistry*, Fourth Edition (Prentice-Hall, Upper Saddle River, New Jersey), January 2011
12. N.J. Tro, *Principles of General Chemistry: A Molecular Approach*, Second Edition (Prentice Hall, Upper Saddle River, New Jersey), January 2012
13. N.J.Tro, *Chemistry in Focus: A Molecular View or Our World*, Fifth Edition, (Brooks-Cole Publishing, Pacific Grove, California), January 2012
14. N.J. Tro, *General Chemistry: A Molecular Approach*, Third Edition (Prentice Hall, Upper Saddle River, New Jersey), January 2013
15. N.J. Tro, *Chemistry: Structure and Properties* (Prentice Hall, Upper Saddle River, New Jersey), (Manuscript in Preparation)