
Kai Niu

School of Science, Tianjin University
of Technology and Education,
Tianjin, 300222, P. R. China

Phone: +86-131-631-57296

E-mail: dr.niukai@gmail.com

Date of Birth

April, 20, 1980, Tongliao, Inner Mongolia, P. R. China

Work Experience

Research scientist, Arthur Amos Noyes Laboratory of Chemical Physics, California Institute of Technology, USA, 2018.1-now

Associate professor, School of Science, Tianjin University of Technology and Education, P. R. China. 2014.11-now

Assistant professor, School of Science, Tianjin University of Technology and Education, P. R. China. 2014.7-2014.10

Postdoctoral in Chemistry, with Prof. Rudolph A. Marcus in California Institute of Technology, USA, 2012.5-2014.4

Research fellow, with Prof. Soo-Y. Lee in Nanyang Technological University, Singapore, 2012.3-2012.5

Research fellow, with Prof. Soo-Y. Lee in Nanyang Technological University, Singapore, 2010.1-2011.12

Project officer, with Prof. Soo-Y. Lee in Nanyang Technological University, Singapore, 2008.1-2009.12

Education

Ph.D. Atomic and Molecular Physics, Department of Physics, Dalian University of Technology, Dalian 116024, P. R. China, 2009

Supervisor: Prof. Shu-lin Cong, shlcong@dlut.edu.cn

B.S. Physics, Inner Mongolia University, Hohhot 010021, P. R. China, 2003

Research Experience

Research on theoretical description of sum frequency generation spectroscopy for water surface.

Research on theoretical description of coherent anti-Stokes Raman spectroscopy.

Research on theoretical description of femtosecond stimulated Raman spectroscopy.

Research on numerical solution of reduced density matrix for one dimensional bound state involving markov and nonmarkov approximation.

Research on theoretical description of femtosecond fluorescence depletion spectrum of molecules in solution and internal conversion process.

Research on state-selective manipulation of HOD molecule using chirped laser pulse.

Research on endohedral silicon dication and phosphorus trication inside the cryptand cage.

Achievement

“Theoretical interpretations of sum frequency generation,” China Scholarship Council (CSC), File No. 201707760008. (2017.12-2018.12)

“Photon induced isomerization processes in femtosecond stimulated Raman spectroscopy,” Tianjin Municipal Education Commission, Grant No. JWK1704.

“Sum frequency generation spectrum of the water surface,” Tianjin University of Technology and Education, Grant No. KYQD14037.

“Sum rule comparison of broadband and narrow band sum frequency generation” *K. Niu*, Hongfei Wang, and R. A. Marcus, in preparation

“Small Amount Makes a Big Difference: Critical (n-1)d Valence Orbitals of Heavy Alkaline Earth Metals inside Cage Clusters” Le Yang, Xiaojiao Gu, Bo Li, *K. Niu*, and Peng Jin, Inorg, Chem 60, 8621(2021)

“Sum frequency generation: calculation of absolute intensities, comparison with experiments, and two-field relaxation-based derivation” *K. Niu* and R. A. Marcus, Proc. Natl. Acad. Sci. USA 117, 2805(2020)

“What are the line shapes of twenty four terms in coherent anti-Stokes Raman spectroscopy?” *K. Niu* and Soo-ying Lee, AIP ADVANCES 5, 127213 (2015)

Alumni 63rd Lindau Nobel Laureate Meeting, June 2013.

“Analysis of time resolved fs and fs/ps coherent anti-Stokes Raman spectroscopy: Application to toluene and Rhodamine 6G,” *K. Niu* and Soo-Y. Lee, J. Chem. Phys. 136, 064504 (2012).

Simple Aspects of Femtosecond Stimulated Raman Spectroscopy, Bin Zhao, *K. Niu*, Xiuting Li, and Soo-Y. Lee, Science China Chemistry, 2011. (Invited Paper).

“Inverse Raman bands in ultrafast Raman loss spectroscopy,” Xueqiong Qiu, Xiuting Li, *K. Niu*, and Soo-Y. Lee, J. Chem. Phys. 135,164502 (2011).

“Wave packet analysis of femtosecond stimulated raman spectroscopy,” *K. Niu*, Bin Zhao, Zhigang Sun, and Soo-Y. Lee, In: Advances in Multiphoton Processes and Spectroscopy, Vol. 20, pp. 1-51. World Scientific Pub Co, Singapore, 2011. (Invited Chapter).

“Femtosecond stimulated Raman spectroscopy modeled with a delta probe pulse: application to rhodamine 6G,” Xueqiong Qiu, Xiuting Li, *K. Niu*, and Soo-Y. Lee, J. Raman Spectrosc. 42, 563 (2010).

“Selective excitation of high vibrational states of hydrogen fluoride in a thermal environment by ultrafast infrared laser pulses,” *K. Niu*, L.-Q. Dong, and S.-L. Cong, J. Theor. Comput. Chem. 9, 401 (2010).

“Analysis of femtosecond stimulated Raman spectroscopy of excited-state evolution in bacteriorhodopsin,” *K. Niu*, Bin Zhao, Zhigang Sun, and Soo-Y. Lee, J. Chem. Phys. 132, 084510 (2010).

“Femtosecond stimulated Raman scattering for polyatomics with harmonic potentials: Application to rhodamine 6G,” *K. Niu*, S.-L. Cong, and Soo-Y. Lee, J. Chem. Phys. 131, 054311 (2009).

“Internal conversion process of chlorophyll *a* in solvents in femtosecond pump-probe laser fields,” *K. Niu*, L.-Q. Dong, and S.-L. Cong, *Chin. J. Chem. Phys.* 21, 211 (2008).

“Theoretical description of femtosecond fluorescence depletion spectrum of molecules in solution,” *K. Niu*, L.-Q. Dong, and S.-L. Cong, *J. Chem. Phys.* 127, 124502 (2007).

“Theoretical investigation of ultrafast dynamics of the rhodamine-700 molecule in solvents,” L.-Q. Dong, *K. Niu*, and S.-L. Cong, *J. Theor. Comput. Chem.* 6, 885 (2007).

“Theoretical analysis of internal conversion pathways and vibrational relaxation process of chlorophyll *a* in ethyl ether solvent,” L.-Q. Dong, *K. Niu*, and S.-L. Cong, *Chem. Phys. Lett.* 440, 150 (2007).

“Theoretical analysis of femtosecond fluorescence depletion spectra and vibrational relaxations of dye oxazine 750 and rhodamine 700 molecules in acetone solution,” L.-Q. Dong, *K. Niu*, and S.-L. Cong, *Int. J. Quantum Chem.* 107, 1205 (2007).

“Theoretical study of vibrational relaxation and internal conversion dynamics of Chlorophyll *a* in ethyl acetate solvent in femtosecond laser fields,” L.-Q. Dong, *K. Niu*, and S.-L. Cong, *Chem. Phys. Lett.* 432, 286 (2006).