

# CURRICULUM VITAE

## Wei (David) Qian, Ph. D.

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### Visa Status and Citizenship

**Visa Status:** US Permanent Residency

**Citizenship:** P. R. China

### Education

Ph. D. in Physics (specialization in Optics), July 2000, Peking University, Beijing, P. R. China.

Thesis title: “*Ultrafast spectroscopy studies of metallic and semiconductor nanoparticles and C<sub>60</sub>-metal derivatives*”

**Adviser: Professor Yinghua Zou**

B.S. in Physics, July 1993, Anhui University, P. R. China.

Thesis title: “*On the exact soliton solution for a class of coupled field equations*”

**Advisers: Professor Xiaowu Huang & Professor Jiahua Han**

### Employment History

12/07- present

Senior Research Scientist and Assistant Director, Laser Dynamics Laboratory, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA

**Supervisor: Professor Mostafa A. El-Sayed**

05/03 – 12/07

Research Scientist II and Assistant Director, Laser Dynamics Laboratory, School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA

**Supervisor: Professor Mostafa A. El-Sayed**

08/00 - 05/03

Postdoctoral Research Associate, Department of Chemistry and Biochemistry, University of Colorado at Boulder, Boulder, CO

**Adviser: Professor David M. Jonas**

08/93 – 07/95

Lecturer, Department of Physics, Anhui University, Anhui, P. R. China

Offering Modern Optics Laboratory for junior and senior students

## Research Experience

05/03 - present

Research Scientist II (05/03-12/07), Senior Research Scientist (12/07-present), and Assistant Director, Laser Dynamics Laboratory (LDL), School of Chemistry and Biochemistry, Georgia Institute of Technology

**Supervisor: Professor Mostafa A. El-Sayed**

- ? Assisted Professor Mostafa El-Sayed, LDL director, to train graduate students in the field of laser spectroscopy.
- ? As an assistant director, contributed to the overall research functions and the management of LDL.
- ? Conducted cutting edge researches in the interdisciplinary areas between steady-state and time-resolved laser spectroscopy, nanoscience and nanotechnology, and biotechnology.
  - § Interparticle near-field electromagnetic coupling and size effects on radiative and nonradiative properties of plasmonic nanoparticles assembled into periodic monolayer arrays.
  - § The effects of strong evanescent field near the surfaces of metallic nanoparticles generated by localized surface plasmon resonance (LSPR) on light induced reactions in biological photoreceptors and electronic relaxation in nanosized semiconductor particles..
  - § Carrier dynamics in heterostructured semiconductor nanocrystals with dual quantum structures and optical gain in solutions of CdS quantum dots
  - § Interfacial charge transfer in dye sensitized solar cells based on nanocrystalline oxide semiconductor films.
  - § Size dependent electron-phonon coupling in copper nanoparticles and surface plasmon field-enhanced fluorescence from copper nanoparticles.
  - § Intracellular delivery of drugs, proteins, and genes into Mammalian Cells utilizing localized photoacoustic emission generated by carbon nanoparticles.
  - § Applications of plasmonic nanoparticles for cancer biomedical imaging, sensing, and selective photothermal therapy.
  - § Ultrafast dissociation processes of gold-sulfur bonds in gold nanoparticle-thiolated DNA conjugates.
  - § Femtosecond laser modification and/or ejection of gold nanoprisms in periodic monolayer arrays on quartz substrate fabricated by nanosphere lithography.
  - § Seed-mediated synthesis of highly monodisperse colloidal solutions of gold nanorods with adjustable aspect ratio.

08/00 - 05/03

Postdoctoral Research Associate, Department of Chemistry and Biochemistry, University of Colorado at Boulder, Boulder, CO

**Advisor: Professor David M. Jonas**

- ? Used polarized ultrafast spectroscopy and femtosecond two-dimensional Fourier transform experiments to investigate electronic wavepackets motion through a conical interaction in silicon naphthaocyanine molecule with a doubly degenerate electronic state.
- ? Developed quantum theory of the coherent polarization anisotropy and temporal domain approach for determining the symmetry of molecular vibrations with extensions to quantum dots and other important systems.

08/95 - 07/00

Graduate Research Assistant, Department of Physics, Peking University, Beijing, P. R. China

**Advisor: Professor Yinghua Zou**

- ? Investigated coherent phonon dynamics in metallic nanoparticles (Gold and Silver).
- ? Explored carrier dynamics of CdSe nanocrystal film with 200 nm spatial resolution and 150 fs

temporal resolution by combining high-sensitivity ultrafast pump-probe setup with near-field scanning optical microscope (NSOM).

- ? Ultrafast third-order nonlinear optical response of polymer and C<sub>60</sub>-metal derivatives.
- ? Extensive experience on maintaining and operating complicated laser facilities, optical and electronic instruments, and on designing experimental setup.

02/93 - 07/93

Undergraduate Research Assistant, Department of Physics, Anhui University, Anhui, P. R. China

- ? Theoretical research on nonlinear coupled differential equations using function-series approach.

## Recent Research Interests

### Nanophotonics

- ? Generation, amplifying, and propagation of electromagnetic energy below diffraction limit within arrays of metallic nanoparticles.
- ? Modulating radiative and nonradiative properties of semiconductor nanocrystals using localized surface plasmon resonance of metallic nanoparticles.
- ? Investigating ultrafast carrier relaxation, localization, and spin dynamics in heterostructured semiconductor nanocrystals with multiple quantum structures.
- ? Ultrafast electronic dynamics in the third generation photovoltaic devices (such as solar cells) based on semiconductor quantum dots

### Biophysics

- ? Coherent polarized ultrafast spectroscopy studies of the primary steps of photoisomerization of the retinal molecule in membrane protein bacteriorhodopsin (bR) and the modulation of photoinduced *cis-trans* isomerization, deprotonation, and reprotonation processes in bR via strong evanescent field near the surfaces of metallic nanoparticles generated by localized surface plasmon resonance (LSPR).
- ? Exploring the mechanisms and kinetics of biomolecular interactions by developing and applying high sensitive surface plasmon resonance spectroscopy.

### Biophotonics

- ? Application of antibody-conjugated metallic nanoparticles (with different shapes) for cancer cell targeting, light scattering imaging, and selectively photothermal cancer therapy with infrared laser.
- ? Nano-photoacoustic therapeutics (NPT): Precisely intracellular delivery of drugs, proteins, and genes into target Mammalian Cells via laser induced localized photoacoustic emission from nanosystems.

## Honors and Awards

**Distinguished Ph. D. Dissertation Award**, Peking University, P. R. China, 2002.

**Distinguished Graduate Student Award for Research** (the highest award for graduate students in the Peking University and are awarded annually to only 10 graduate students), Peking University, P. R. China, 2000.

**Hong Kong Tung Foundation Fellowship**, Peking University, P. R. China, 1999.

**Hubei Construction Bank Fellowship**, Peking University, P. R. China, 1998.

**Undergraduate Student Fellowship**, Anhui University, P. R. China, 1989-1993

**Best Poster Award (First Prize)**, 231<sup>st</sup> ACS National Meeting Physical Chemistry Division Poster Competition, 2006.

**Best Poster Award**, Gordon Research Conference on Drug Carriers in Medicine and Biology, Aug 20-25, 2006, Big Sky, Montana.

## Patents

"Cancer Cells Assemble and Align Gold Nanorods using Polarized Roman Spectra for Diagnosis of Cancer Cells", filed on April 29, 2008, in pending

"Gigahertz Optical Modulation Resulting from Coherent Lattice Oscillations Induced by Femtosecond Laser Pumping of 2D Photonic crystals of Gold Polystyrene micro-spheres", filed on July 11, 2007, in pending

"CdS Quantum Dot Lasing in Room Temperature Liquid Solution", filed on June 28, 2006, in pending.

"Nanoparticle and Laser Induced Effects on Cells and Tissue for Drug and Gene Delivery", filed on August 21, 2006, in pending.

## References

### **Professor Mostafa A. El-Sayed**

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### **Professor David M. Jonas**

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University of Colorado at Boulder, Boulder, CO 80309-0215  
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### **Professor Zhong L. Wang**

Director, Center for Nanostructure Characterization (CNC)  
School of Materials Science and Engineering  
Georgia Institute of Technology  
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### **Professor Mark R. Prausnitz**

Professor of Chemical and Biomedical Engineering  
Director of the Center for Drug Design, Development and Delivery (CD4)  
School of Chemical & Biomolecular Engineering  
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## Journal Publications via Peer Review (Cited over 900 times, H-factor is 12)

45. Biesso, A, Qian, W., Huang, X. H., and El-Sayed, M. A. "Gold nanoparticles surface plasmon field effects on the proton pump process of the bacteriorhodopsin photosynthesis," *Journal of the American Chemical Society*, submitted.
44. Chakravarty, P., Qian, W., El-Sayed, M. A., and Prausnitz, M. "Drug and gene delivery using photoacoustic emissions from carbon nanoparticles," *Nature Nanotechnology*, resubmitted after revision.
43. Farrow, D. A., Smith E. R., Qian, W., and Jonas D. M. "The polarization anisotropy of vibrational quantum beats in resonant pump-probe experiments: Diagrammatic calculations for square symmetric molecules," *Journal of Chemical Physics*, in press.
42. Neretina, S., Qian, W., Dreaden, E., El-Sayed, M. A., Hughes, R. A., Preston, J. S., and Mascher, P. "Plasmon field effects on the nonradiative relaxation of hot electrons in an electronically quantized system: CdTe-Au core-shell nanowires," *Nano Letters* 2008, 8, 2410-2418.
41. Biesso, A, Qian, W, and El-Sayed, M. A. "Gold nanoparticle plasmonic field effect on the primary step of the other photosynthetic system in nature, bacteriorhodopsin," *Journal of the American Chemical Society* 2008, 130, 3258-3259.
40. Farrow, D. A., Qian, W., Smith E. R., Ferro A. A., and Jonas D. M. "Watching electrons move through a conical intersection," *Journal of Chemical Physics* 2008, 128, 144510. (**Highlighted as Editors' Choice in Science 2008, 320, 426**).
39. Huang, W. Y., Qian, W., El-Sayed, M. A., "Gigahertz optical modulations induced by femtosecond laser pumping of gold capped periodic polystyrene sphere array," *Advanced Materials* 2008, 20, 733-737.
38. Huang, X. H., Qian, W, El-Sayed, I. H., El-Sayed, M. A., "The potential use of the enhanced nonlinear properties of gold nanospheres in photothermal cancer therapy," *Lasers in Surgery & Medicine* 2008, 39, 747-753.
37. Huang, W. Y., Qian, W., Jain, P. K., El-Sayed, M. A., "The effect of plasmon field on the coherent lattice phonon oscillation in electron-beam fabricated gold nanoparticle pairs," *Nano Letters* 2007, 7, 3227-3234.
36. Huang, W. Y., Qian, W., El-Sayed, M. A., Ding, Y., and Wang, Z. L., "The effect of the lattice crystallinity on the electron-phonon relaxation rates in gold nanoparticles," *Journal of Physical Chemistry C* 2007, 111, 10751-10757.
35. Huang, X. H., El-Sayed, I. H., Qian, W, El-Sayed, M. A., "Cancer cells assemble and align gold nanorods conjugated to antibodies to produce highly enhanced, sharp and polarized surface Raman spectra: a potential cancer diagnostic marker," *Nano Letters* 2007, 7, 1591-1597.
34. Nishikiori, H., Qian, W., El-Sayed, M. A., Tanaka, N., Fujii T., "The change in titania structure from amorphousness to crystalline increasing photoinduced electron transfer rate in dye- titania system," *Journal of Physical Chemistry C* 2007, 111, 9008-9011.
33. Tabor, C., Qian, W., and El-Sayed, M. A., "Dependence of the threshold energy of femtosecond laser ejection of gold nanoprisms from quartz substrates on the nanoparticle environment," *Journal of Physical Chemistry C (Kenneth B. Eisenthal Festschrift)* 2007, 111(25), 8934-8941.
32. Huang, W. Y., Qian, W., El-Sayed, M. A., "Gold nanoparticles propulsion from surface fueled by absorption of femtosecond laser pulse at their surface plasmon resonance," *Journal of the American Chemical Society* 2006, 128, 13330-13331.

31. Darugar, Q., Qian, W., El-Sayed, M. A., "Observation of optical gain in solutions of CdS quantum dots at room temperature in the blue region," (*Corresponding author*), *Applied Physics Letters* 2006, 88, 261108 (*selected for both the Virtual Journal of Nanoscale Science & Technology and the Virtual Journal of Ultrafast Science*).
30. Schill, A. W., Gaddis, C. S., Qian, W., Cai, Y., Milam, V. T., Sandhage, K. H., El-Sayed, M. A., "Ultrafast electronic relaxation and charge-carrier localization in CdS/CdSe/CdS quantum-dot quantum-well heterostructures," *Nano Letters* 2006, 6, 1940-1949.
29. Jain, P. K., Qian, W., El-Sayed, M. A., "Ultrafast cooling of photoexcited electrons in gold nanoparticle-thiolated DNA conjugates involves the dissociation of the gold-thiol bond," *Journal of the American Chemical Society* 2006, 128, 2426-2433.
28. Qian, W., Wei, L. Z., Cao, F. Y., Chen, Q. W., Qian, W., "Low temperature synthesis of carbon nanospheres by reducing supercritical carbon dioxide with bimetallic lithium and potassium," *Carbon* 2006, 44, 1303-1307.
27. Darugar, Q., Qian, W., El-Sayed, M. A., "Size dependent ultrafast electronic energy relaxation in copper nanoparticles," *Journal of Physical Chemistry B* 2006, 110, 143-149.
26. Huang, X. H., El-Sayed, I. H., Qian, W., El-Sayed, M. A., "Cancer cell imaging and photothermal therapy in NIR region by using gold nanorods," *Journal of the American Chemical Society* 2006, 128, 2115-2120. (*Most cited paper in the field of chemistry, Sept-Oct 2007, most cited paper in JACS in 2007*).
25. Jain, P. K., Qian, W., El-Sayed, M. A., "Ultrafast electron relaxation dynamics in coupled metal nanoparticles in aggregates," *Journal of Physical Chemistry B* 2006, 110, 136-142.
24. Huang, W. Y., Qian, W., El-Sayed, M. A., "Photothermal reshaping of prismatic Au nanoparticles in periodic monolayer arrays by femtosecond laser pulses," *Journal of Applied Physics* 2005, 98, 11430/1-11430/8 (*selected for the Virtual Journal of Ultrafast Science*).
23. Huang, W. Y., Qian, W., El-Sayed, M. A., "The optically detected coherent lattice oscillation in silver and gold monolayer periodic nanoprism arrays: the effect of interparticle coupling," *Journal of Physical Chemistry B* 2005, 109, 18881-18888.
22. Huang, W. Y., Qian, W., El-Sayed, M. A., "Coherent vibrational oscillation in gold prismatic monolayer periodic nanoparticle arrays," *Nano Letters* 2004, 4, 1741-1747.
21. Qian, W., Jonas, D. M., "Role of cyclic sets of transition dipoles in the pump-probe polarization anisotropy: Application to square symmetric molecules and perpendicular chromophore pairs," *Journal of Chemical Physics* 2003, 119, 1611-1622. (*selected for the Virtual Journal of Ultrafast Science*).
20. Teo, B. K., Xu, Y. H., Zhong, B. Y., He, Y. K., Chen, H. Y., Qian, W., Deng, Y. J., Zou, Y. H., "A comparative study of third-order nonlinear optical properties of silver phenylacetylide and related compounds via ultrafast optical Kerr effect measurements," *Inorganic Chemistry* 2001, 40, 6794-6801.
19. Wu, S. J., Qian, W., Xia, Z. J., Zou, Y. H., Wang, S. Q., Shen, S. Y., Xu, H. J., "Third-order optical nonlinearity of azo dyes and their metal complex," *Journal of Infrared and Millimeter Waves* 2001, 20, 343-347.
18. Qian, S. X., Ma, G. H., Chen, Y., Cai, R. F., Qian, W., Lin, L., Zou, Y. H., "Ultrafast optical Kerr effect of the C-60-PAN copolymer film," *Journal of Physics and Chemistry of Solids* 2000, 61, 1069-1073.

17. Qian, W., Lin, L., Xia, Z. J., Zou, Y. H., Qian, S. X., Ma, G. H., Lin, Y. H., Cai, R. F., Chen, Y., Huang, Z. E., "Measurement of third-order optical nonlinearity of C60M2 (M = Pd, Pt, and Sm) organometallic compounds by the femtosecond optically heterodyned optical Kerr effect," *Chemical Physics Letters* 2000, 319, 89-94.
16. Qian, W., Lin, L., Deng, Y. J., Xia, Z. J., Zou, Y. H., Wong, G. K. L., "Femtosecond studies of coherent acoustic phonons in gold nanoparticles embedded in TiO2 thin films," *Journal of Applied Physics* 2000, 87, 612-614.
15. Wu, S. J., Qian, W., Xia, Z. J., Zou, Y. H.; Wang, S. Q.; Shen, S. Y.; Xu, H. J., "Investigation of third-order nonlinearity of an azo dye and its metal-substituted compounds.," *Chemical Physics Letters* 2000, 330, 535-540.
14. Deng, Y. J., Xu, Y. H., Lin, L., Qian, W., Xia, Z. J., Teo, B. K., Zou, Y. H., "Heterodyned femtosecond optical Kerr effect of silver phenylacetylide complex," *Journal of Materials Science Letters* 2000, 19, 549-551.
13. Bai, Z. G., Yu, D. P., Wang, J. J., Zou, Y. H., Qian, W., Fu, J. S., Feng, S. Q., Xu, J., You, L. P., "Synthesis and photoluminescence properties of semiconductor nanowires," *Materials Science and Engineering B-Solid State Materials for Advanced Technology* 2000, 72, 117-120.
12. Qian, S., Qian, J., Ma, G., Chen, Y., Cai, R., Lin, L., Qian, W., Zou, Y., "Femtosecond nonlinear optical property of the C60(CH3)<sub>x</sub>(PAN)<sub>x</sub> copolymer," *MCLC S&T, Section B: Nonlinear Optics* 1999, 23, 75-82.
11. Zou, Y., Yan, H., Wang, J., Qian, W., Deng, Y., "Near-field ultrafast and Raman spectroscopy of diamond film," *Journal of Quantum Electronics* 1999, 16, 543-546.
10. Qian, W., Yan, H., Wang, J. J., Zou, Y. H., Lin, L., Wu, J. L., "Observation of coherent phonons in silver nanoparticles embedded in BaO thin films," *Applied Physics Letters* 1999, 74, 1806-1808.
9. Lin, L., Qian, W., Wang, C. F., Zou, Y. H., Wang, Q., Chen, H. Y., "Investigation of third-order nonlinearity of polybenzotrioles by heterodyned femtosecond optical Kerr gate," *Journal of Nonlinear Optical Physics & Materials* 1999, 8, 419-429.
8. Yu, D. P., Bai, Z. G., Wang, J. J., Zou, Y. H., Qian, W., Fu, J. S., Zhang, H. Z., Ding, Y., Xiong, G. C., You, L. P., Xu, J., Feng, S. Q., "Direct evidence of quantum confinement from the size dependence of the photoluminescence of silicon quantum wires," *Physical Review B* 1999, 59, R2498-R2501.
7. Lin, L., Qian, W., Wang, C. F., Zou, Y. H., Wang, Q., Chen, H. Y., "Heterodyned femtosecond optical Kerr effect of substituted conjugated polymers," *Chinese Physics Letters* 1999, 16, 656-658.
6. Qian, W., Yan, H., Wang, J. J., Zou, Y. H., Lin, L., Wu, J. L., "Coherent phonons in Ag-BaO thin films," *Chinese Physics Letters* 1998, 15, 834-836.
5. Yan, H., Qian, W., Deng, Y. J., Xia, Z. J., Zou, Y. H., Zhang, J. B., Lin, Y., Xiao, X. R., "Femtosecond time-resolved near-field spectroscopy of CdSe nanocluster films," *Chinese Physics Letters* 1999, 16, 683-685.
4. Yu, D. P., Hang, Q. L., Ding, Y., Zhang, H. Z., Bai, Z. G., Wang, J. J., Zou, Y. H., Qian, W., Xiong, G. C., Feng, S. Q., "Amorphous silica nanowires: Intensive blue light emitters," *Applied Physics Letters* 1998, 73, 3076-3078.
3. Yu, D. P., Bai, Z. G., Ding, Y., Hang, Q. L., Zhang, H. Z., Wang, J. J., Zou, Y. H., Qian, W., Xiong, G. C., Zhou, H. T., Feng, S. Q., "Nanoscale silicon wires synthesized using simple physical evaporation," *Applied Physics Letters* 1998, 72, 3458-3460.

2. Huang, X. W., Han, J. H., Qian, K. Y., Qian, W., "On the Exact Soliton-Solutions for a Class of Coupled Field-Equations," *Physics Letters A* 1993, 182, 300-301.

1. Han, J., Qian, K., Qian, W., Huang, X., "New static soliton solutions to a class of nonlinear coupled field equations," *Journal of Anhui University Natural Science Edition* 1996, 20, 32.

## Publications on Conference Proceedings

10. Qian, W., Huang, W. Y., Darugar, Q., El-Sayed, M. A., "Ultrafast electronic and lattice process of plasmonic nanoparticles of different shape," *Femtochemistry VII: Fundamental Ultrafast Processes in Chemistry, Physics, and Biology*, A. W. Castleman Jr. and M. L. Kimble, eds. (Elsevier, Amsterdam, 2006).

9. Huang, W. Y., Qian, W., El-Sayed, M. A., "Optically detected coherent picosecond lattice oscillations in two dimensional arrays of gold nanocrystals of different sizes and shapes induced by femtosecond laser pulses," *Proc. SPIE Int. Soc. Opt. Eng.* 2005, 5927, 592701/1-529701/9.

8. Farrow, D. A., Qian, W., Smith E. R., Ferro A. A., and Jonas D. M. "Measurement of conical intersection dynamics by impulsive femtosecond polarization spectroscopy" *Ultrafast Phenomena XIV*, edited by T. Kobayashi, T. Okada, T. Kobayashi, K. Nelson, S. De Silvestri (Springer, New York, 2005) pp.380-382.

7. Qian, W. Ferro, A. A., Treglio, R. T., and Jonas D. M., "Femtosecond 2D Fourier transform study of electronic reorientation in silicon naphthalocyanine" *Ultrafast Phenomena XIII*, edited by R.D. Miller, M.M. Murnane, N.F. Scherer, and A.M. Weiner (Springer, New York, 2003) pp. 557-559.

6. Xu, Y. H., Teo, B. K., Wu, H. M., Guo, S. L., He, Y. K., Chen, H. Y., Qian, W., Wu, S. J., Zou, Y. H., "Conjugated oligomeric coordinated silver phenylacetylde derivatives with ultrafast optical Kerr effect," *Materials Research Society Symposium Proceedings* 2002, 665, 295-300.

5. Zou, Y. H., Qian, W., Lin, L., Xia, Z., Qian, S., Ma, G., Lin, Y. H., Cai, R., Huang, Z.-E., "Femtosecond optically heterodyned optical Kerr effect studies of C60-metal films," *Proc. SPIE Int. Soc. Opt. Eng.* 1999, 3796, 144-152.

4. Zou, Y. H., Qian, W., Yan, H., Wang, J., Lin, L., Wu, J., "Observation of coherent phonons in silver nanoparticles embedded in BaO thin films," *Proc. SPIE Int. Soc. Opt. Eng.* 1999, 3790, 219-226.

3. Zou, Y. H., Lin, L., Qian, W., Wang, C., Wang, Q., Chen, H., "Investigation of third-order nonlinearity of substituted-polyzonitriles by heterodyned femtosecond optical Kerr gate," *Proc. SPIE Int. Soc. Opt. Eng.* 1999, 3796, 131-142.

2. Qian, S., Ma, G., Qian, J., Chen, Y., Cai, R., Lin, L., Qian, W., Zou, Y., "Femtosecond nonlinear optical response of the C60(CH3)<sub>x</sub>(PAN)<sub>x</sub> copolymer," *Proceedings-Electrochemical Society* 1999, 99-12, 390-397.

1. Qian, S., Ma, G., Chen, Y., Cai, R., Qian, W., Lin, L., Zou, Y., "Ultrafast nonlinear optical property of the C60(CH3)<sub>x</sub>(PAN)<sub>x</sub> copolymer," *Proc. SPIE Int. Soc. Opt. Eng.* 1999, 3798, 140-146.

## Conference Presentations

18. Qian, W., Schill, A. W., Gaddis, C. S., and El-Sayed, M. A., "Ultrafast optical studies of electronic relaxation across the interface in CdS/CdSe/CdS quantum-dot quantum-well heterostructures," 235<sup>th</sup> ACS National Meeting, New Orleans, LA, April 6-10, 2008.

17. Tabor, C., Qian, W., El-Sayed, M. A., "Combining lithographic and photothermal femtosecond laser



ejection techniques of gold nanoparticles to synthesize monodisperse colloids," *234<sup>th</sup> ACS National Meeting*, Boston, MA, August 19-23, 2007.

16. Chakravarty, P., Qian, W., El-Sayed, M. A., and Prausnitz, M., "Intracellular delivery using photoacoustic emissions from carbon nanoparticles," *Gordon Research Conference on drug carriers in medicine and biology*, Big Sky, Montana, Aug 20-25, 2006.

15. Huang, W. Y., Qian, W., El-Sayed, M. A., "Effect of interparticle coupling on coherent phonon oscillations of monolayer periodic plasmonic nanoparticles," *232<sup>nd</sup> ACS National Meeting*, San Francisco, CA, United States, Sept. 10-14, 2006.

14. Jain, P. K.; Qian, Wei; El-Sayed, Mostafa A., "Plasmon coupling and electron relaxation in gold nanoparticle aggregates," *232<sup>nd</sup> ACS National Meeting*, San Francisco, CA, United States, Sept. 10-14, 2006.

13. Huang, W. Y., Qian, W., El-Sayed, M. A., "Femtosecond laser modification of monolayer periodic prismatic gold nanoparticle arrays," *232<sup>nd</sup> ACS National Meeting*, San Francisco, CA, United States, Sept. 10-14, 2006.

12. Huang, X. H., El-Sayed, I. H., Qian, W, El-Sayed, M. A., "Cancer cell diagnostics and photothermal therapy by using gold nanospheres and nanorods," *232<sup>nd</sup> ACS National Meeting*, San Francisco, CA, United States, Sept. 10-14, 2006.

11. Qian, W., Huang, W. Y., El-Sayed, M. A., "Optically detected ultrafast electronic and lattice processes of periodic plasmonic nanoparticles of different shape," *231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26-30, 2006 (Oral presentation)*.

10. Jain, P. K., Qian, W., El-Sayed, M. A., "Ultrafast spectroscopy of the femtosecond pulse-initiated Au-S bond dissociation in gold nanoparticle-thiolated DNA conjugates," *231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26-30, 2006*

9. Huang, W. Y., Qian, W., El-Sayed, M. A., "Ultrafast laser modification of prismatic gold nanoparticles in 2D arrays," *231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26-30, 2006*.

8. Dargar, Q., Qian, W., El-Sayed, M. A., "Optical properties and ultrafast bleach dynamics of colloidal copper nanoparticles solution," *231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26-30, 2006*.

7. Huang, W. Y., Qian, W., El-Sayed, M. A., "Coherent lattice oscillations in gold prismatic monolayer nanocrystal arrays made by the nanosphere lithographic technique," *229<sup>th</sup> ACS National Meeting, San Diego, CA, March 13-17, 2005*.

6. Jonas, D. M., Farrow, D. A., Qian, W., Smith, E. R., Ferro, A. A., "Femtosecond and 2D fourier transform experiments on Jahn-Teller dynamics," *227<sup>th</sup> ACS National Meeting, Anaheim, CA, March 28 – April 1, 2004*.

5. Farrow, D. A., Qian, W., Smith, E. R., Jonas, D. M., "Using femtosecond polarization spectroscopy to determine vibrational symmetry," *227<sup>th</sup> ACS National Meeting, Anaheim, CA, March 28 – April 1, 2004*.

4. Qian, W., Darugar, Q., El-Sayed, M. A., "Femtosecond polarization pump-probe studies of nanometer-size CdSe rods and dots," *55<sup>th</sup> Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, November 16-19, 2003*.

3. Zou, Y. H., Qian, W., Lin, L., Xia, Z. J., and Wong, G. K. L., "Femtosecond studies of Coherent phonons in metallic nanoparticles embedded in dielectric films," *CLEO/QELS 2000, San Francisco, California, May 7-12, 2000*.

2. Yu, D. P., Bai, Z. G., Wang, J. J., Zou, Y. H., Qian, W., Fu, J. S, Zhang, H. Z., Ding, Y., You, L. P., Xu, J., Feng, S. Q., "Optical property characterization of the silicon quantum wires," *MRS Spring' San Francisco, California, April 4-9, 1999.*
1. Deng, Yujun, Hong Yan, Wei Qian, Zongju Xia, and Yinghua Zou, "Near-field two wavelength pump-probe spectroscopy of CdSe nanocluster films," *The proceeding of 2<sup>nd</sup> Asia Pacific workshop on Near Field Optics, Beijing, P. R. China, October, 1999.*