

Ramani K. Raman

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EDUCATION

- 2007 – Present Ph.D Physics , Michigan State University, USA. – *in progress*
2007 M. S. Physics, Michigan State University, USA
2003 B. A. Computer Science, University of Cambridge, UK.
2001 B. Sc. (Honors) Physics, Delhi University, India

RESEARCH EXPERIENCE

- 01/2006 – Present Graduate Research Assistant, Ultrafast Electron Diffraction Lab, Michigan State University.
Adviser: Prof. Chong-Yu Ruan
Photophysics of graphite & carbon nanostructures studied using ultrafast electron diffraction.
6/2002 – 9/2002 Research Assistant, Computer Lab, University of Cambridge
Emotionally Intelligent Interfaces. Implementing image-processing techniques such as active contour models to aid in tracking human facial expressions.
9/1999 – 2/2000 Research Assistant, Center for Mathematical Sciences, Delhi
Chaos in the solar system. Science outreach project on Chaos theory.

TEACHING EXPERIENCE

- Fall 2004 & Spring 2005 Teaching Assistant, Michigan State University.
Introductory laboratory courses covering general physics topics for non-physics majors.
Fall 2005 Teaching Assistant, Michigan State University.
Physics laboratory for freshman physics majors.

HONORS & AWARDS

- 2009 **Alfred J. and Ruth Zeits Research Endowment Fellowship**
2007 **Best Teaching Assistant**, Dept. of Physics & Astronomy, Michigan State University
2001 – 2003 **Nehru Chevening Scholarship.**
Included entire tuition expenses and stipend to pursue studies at University of Cambridge, UK.
2002 **St. Edmund's Commonwealth and Overseas Award**
2001 **Ranked 7th** among approximately 300 candidates in B. Sc Physics (Honors), Delhi University.
2001 **Usha Memorial Prize**, St. Stephen's College, Delhi University
Awarded to the best third-year Physics (Honors) student.
2000 **Sanwa Bank Scholarship**, St. Stephen's College, Delhi University
Awarded to top 2 candidates in second-year Physics (Honors)
1999 & 2000 **Annual Science Scholarship**, Delhi University
For being among the top 10 out of 300 successful candidates in the university examinations

PUBLICATIONS

1. Electronically driven photo-fragmentation of silver nanocrystals revealed by ultrafast diffraction. Ramani K. Raman, Ryan A. Murdick, Richard J. Worhatch, Yoshie Murooka, S. D. Mahanti and Chong-Yu Ruan. (2009) – Submitted.
2. The development and applications of ultrafast electron crystallography. Chong-Yu Ruan, Yoshie Murooka, Ramani K. Raman, Ryan A. Murdick, Richard J. Worhatch and Aric Pell. **Microsc. & Microanal** (2009) – in press
3. Direct observation of optically induced transient structures in graphite using ultrafast electron crystallography. Ramani K. Raman, Yoshie Murooka, Chong-Yu Ruan, Teng Yang, Savas Berber and David Tománek. **Phys. Rev. Lett.** **101**, 077401 (2008).
4. Photovoltage dynamics of the hydroxylated Si(111) surface investigated by ultrafast electron diffraction. Ryan A. Murdick, Ramani K. Raman, Yoshie Murooka and Chong-Yu Ruan. **Phys. Rev. B** **77**, 245329 (2008).
5. Dynamics of size-selected gold nanoparticles studied by ultrafast electron nanocrystallography. Chong-Yu Ruan, Yoshie Murooka, Ramani K. Raman and Ryan A. Murdick. **Nano Lett.** **7**, 1290 (2007).

TALKS (T) & POSTERS (P)

- T* 1. **American Physical Society March Meeting, 03/2009**. Pittsburgh, USA.
Photo-induced structural dynamics of graphite studied by ultrafast electron crystallography.
- P* 2. **Complex & Nanostructured Materials for Energy Applications, 6/2008**. East Lansing, MI, USA.
Direct observation of graphite-to-diamond transition structures using ultrafast electron crystallography.
- T* 3. **American Physical Society March Meeting, 03/2008**. New Orleans, LA, USA.
Photo-induced structural dynamics of graphite studied by ultrafast electron crystallography.
- P* 4. **American Vacuum Society, Michigan Chapter Meeting, 05/2007**. Ann Arbor, MI, USA.
Photo-induced structural dynamics of graphite studied by ultrafast electron nanocrystallography.

IN THE NEWS

1. *Diamonds Aren't Forever*. **Physical Review Focus article**, 1 Aug 2008.
2. *Cover Image*, Microscopy & Microanalysis Special Issue (2009).

SKILLS

- **Instrument design for ultra high vacuum environment.**
Helped design, execute and integrate major instruments currently in use in the UED lab at Michigan State University including the pulsed femtosecond electron gun, cryogenic sample holder with atmosphere-UHV sample transfer capability and electronics for the diffraction imaging system. Extensive experience with UHV systems.
- **Microscopy** (*Micrographs available upon request*)
 - Scanning Electron Microscope (with EDS) – 3+ years of experience.
 - Transmission Electron Microscope – 2+ years of experience with high resolution imaging, EDS, EELS, STEM and Nanodiffraction
 - Atomic Force Microscopy.
- **Miscellaneous**
Raman spectroscopy, Thermal evaporator, Surface profiler, Machining of tools
- **Computing**
C++, AutoCAD, Illustrator, LATEX, Mathematica, Origin, Crystal Maker.

REFERENCES

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