

# Manpreet Kaur

116 Chemistry-Physics Building  
Virginia Polytechnic Institute and State University  
Blacksburg, VA 24061-0435

**Email:** mkaur@vt.edu  
**Phone:** (H): 540-808-9905  
(O): 540-231-9849

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## Objective

To contribute towards the development of eco-friendly and inexpensive industrial techniques in the field of Materials Science

## Research Experience

- **Organic Solar Cell Devices**, Advanced Optics Lab C, Physics Department, Virginia Tech, Jan 2006—
  - Working on improving efficiency of Organic Solar Cell Devices using conducting Thiophene polymers and fullerenes.
  - Studying P3OT-PCBM and P3HT-PCBM bi-layer inter-diffused devices as well as blend devices.
  - Analyzed and characterized the device morphology using AFM, TEM, DLS and Auger Spectroscopy
- **Electro-chromic Polymers**, Physics Department, Virginia Tech, Aug 2005—Dec 2005
  - Worked on assembly of Electro-chromic devices with PAH/PEDOT polymers by ISAM films
- **Biodegradable Polymers**, Physics Department, University of Vermont, Aug 2004—May 2005
  - Worked on laser-based micro state patterning of biodegradable polymers for biomedical application
  - Used deep UV laser for ablation of polymers
  - Characterized polymer surface morphology with SEM
  - Worked on PCTFE and PET polymers
- **Carbon Nanotubes (CNT)**, IIT Delhi, 2003—2004
  - Successfully deposited CNTs and diamond like carbon by ECRP-CVD and MWP-CVD
  - Characterized by FTIR, XRD, SEM, TEM and RAMAN Spectroscopy
  - Observed changes in properties of CNTs when catalyst film thickness is varied.

## Teaching Experience

- Teaching Assistant, General Physics, Physics Department, Virginia Tech Aug 2005-May 2008
  - Taught lab sessions, conducted and graded tests
- Teaching Assistant, General Physics, Physics Department, University of Vermont Aug 2004-May 2005
  - Taught lab sessions, conducted and graded tests.

## Education

- **Doctor of Philosophy**, Candidate, Physics, Virginia Tech, Blacksburg, VA May 2010 (expected)
- **Master of Technology**, Solid State Materials, IIT Delhi, Delhi, INDIA 2004
- **Master of Science**, Guru Nanak Dev University, Amritsar, INDIA 2002
- **Bachelor of Science**, Guru Nanak Dev University, Amritsar, INDIA 2000

## Relevant Courses

- Introduction to Nanotechnology
- Solid State materials
- Material science and technology
- Vacuum Systems
- Dielectric Materials

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## Scientific Skills

- Experience with vacuum systems
- Experience in ECRP-CVD and MWP-CVD for deposition of carbon films
- Material characterization experience SEM, TEM, Raman spectroscopy and Auger Spectroscopy

## Computing Skills

- Operating systems: Linux and Windows
- Scientific Software: Origin, Matlab and Mathematica
- Other Software: Microsoft Office (Excel) and Endnote

## Awards & Activities

- Received Recipient of the State bank Scholarship award from 1997-2002
- Guru Nanak Dev Scholarships, India from 1997-2000.
- Guru Nanak Dev University scholarships, India from 2000- 2002.
- MHRD Scholarship at IIT Delhi during M.Tech.

## Conference Presentations

- Organic Solar Cell Devices, MII, Virginia Tech, April 2009
- Organic Solar Cell Devices, American Chemical Society, August 2008
- Organic Solar Cell Devices, SPIE Optics and Photonics August 2007
- Organic Solar cell Devices, MII, Virginia Tech October 2007
- Participant in the Grad Research Forum in Richmond Feb 2008 on behalf of Virginia Tech
- 13th annual general meeting of the materials research society of India (MRSI), BHU, Feb 2004

## Publications

- Concentration gradient P3OT/PCBM photovoltaic devices fabricated by thermal interdiffusion of separately spin-cast organic layers, Solar energy materials & Solar cells 93(10) 1779-1784.

## References

Dr. Randy Heflin, Professor  
Department of Physics, Virginia Tech  
Voice: 540-231-4504 ; e-mail: [rheflin@vt.edu](mailto:rheflin@vt.edu)

(Other references available upon request)