

# S. Hessam Moosavi Mehr

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Department of Electrical and Computer Engineering    Phone: (+1 778) 322 5954  
University of British Columbia    [hessammehr@gmail.com](mailto:hessammehr@gmail.com)  
Box 1050, 2205 Lower Mall    <http://ece.ubc.ca/~hessamm>  
Vancouver, BC V6T 1Z4

## Personal information

**Date of birth** August 7, 1987, Tehran, Iran

## Education

<b>MASc</b> Electrical Engineering, <i>University of British Columbia</i> , Vancouver, Canada	2011–
<b>BSc</b> Electrical Engineering, <i>Sharif University of Tech.</i> , Tehran, Iran (GPA: 16.5/20)	2005–2009
Preparatory School for the 37th Intl. Chem. Olympiad (IChO), <i>YSC<sup>1</sup></i> , Tehran, Iran	2004–2005
<b>Diploma</b> in the Physical Sciences, <i>Allameh Helli High School</i> , Tehran, Iran	2001–2004

## Research interests

**Nanotechnology** especially nanobiotechnology, molecular devices

**Quantum mechanics** especially as applied to molecular, chemical, and optical phenomena

**Chemistry** especially organic/inorganic synthesis, molecular/organic electronics

**Computer software** especially computational physics, chemistry, digital signal processing, and embedded software

## Research experience

### Summer 2010

Sina Khorasani    IPM + Sharif University of Technology  
Parallel FDTD applied to the problem of scattering off a metal-patterned dielectric slab.

### Summer, Fall 2009

Khashayar Mehrany    Dept. of Electrical Eng., Sharif Univ. of Tech.  
(BSc. Thesis) Time-domain study of beam scattering by finite-sized photonic crystals using MEEP.

### Spring, Summer 2009

Sina Khorasani    Dept. of Electrical Eng., Sharif Univ. of Tech.  
Studying the influence of asymmetry on the band structure of photonic crystals using MIT Photonic Bands (MPB), including development of a Python front-end to MPB to facilitate automation and post-processing.

### Spring, Summer 2008

Laboratory of Biophysics & Molecular Biology    Institute of Biochemistry & Biophysics (IBB)  
Collaborating with a PhD student to devise the necessary phenomenology and a Monte Carlo algorithm to predict DNA damage as a result of gamma radiation.

### Summer 2007

Seizure Prediction Group    Sharif University of Technology  
Studying the application of digital signal processing (DSP) methods to the prediction of epileptic seizure onset using EEG signals.

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<sup>1</sup> Young Scholars Club

## Publications

**S. H. Mousavi Mehr, S. Khorasani** *Influence of asymmetry on the band structure of photonic crystals*, accepted for oral presentation at SPIE Photonics West, 2010, San Francisco, CA, USA

**(As mathematical illustrator) S. M. Shahshahani** *Calculus*<sup>2</sup>, 2008, Fatemi Publications, Tehran, Iran

**S. H. Moosavi Mehr** *Organic Chemistry in a Nutshell*<sup>3</sup>, March 2008

**S. H. Moosavi Mehr, M. Bahraini** *eXAM: An Distributed Online Examination System*, Proceedings of the 18<sup>th</sup> International Conference on Chemical Education, 2004, Turkey

## Presentations & talks

*Superconducting Single Photon Detectors*, Winter 2010, Dept. of Electrical Eng., Sharif University of Tech.

*Quantum Espresso*, December 2009, Dept. of Electrical Eng., Sharif University of Technology

*Qt: What? Why? How?*, October 2009, Dept. of Electrical Eng., Sharif University of Technology

*Gamma-Ray Damage to DNA: Method of Study and Phenomenology as Related to it*, September 2008, Institute of Biochemistry & Biophysics (IBB), University of Tehran

*T<sub>E</sub>X*, April 2007, Dept. of Electrical Eng., Sharif University of Technology

*Wavelets*, January 2007, Dept. of Electrical Eng., Sharif University of Technology

## Teaching experience

**Organic Chemistry** Farzangan High School, 2005–2010

**Laboratory Instructor** Digital Signal Processing Lab, Sharif Univ. Tech., 2009–2010

**Chemistry for the IChO** Allameh Helli High School, 2009–2010, 2004–2006

**Electromagnetics (TA)** Spring 2009, Sharif Univ. Tech.

**Laboratory Instructor** National Biology Olympiad, YSC, August 2008

**Laboratory Assistant** National Chemistry Olympiad, YSC, August 2006

## Selected graduate courses

Nanoscale modeling and simulation

Organometallic chemistry

Photonic crystals

Applied quantum mechanics

Advanced computer programming

## Areas of special ability

Interdisciplinary research

Laboratory work

Teaching and management of scientific communities

Technical writing

Computer programming, scientific computation, and computer typesetting

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<sup>2</sup>ISBN: 978-964-318456-8

<sup>3</sup>Lecture notes for a one-day crash course I taught in Spring 2008, available on my website

## Honors & awards

**Ranked 3rd** Photonics graduate entrance exam, 2009

**Gold Medal (national top 6)** National Chemistry Olympiad, Summer 2004, YSC<sup>4</sup>, Tehran, Iran

**Best Presentation Award** First National Symposium on eLearning, 2003, Tehran, Iran

## Computer skills

**Operating systems** Linux, Mac OS X, Windows

**Typesetting and publishing**  $\text{\LaTeX}$ , Adobe InDesign

**Scientific computation** ChemOffice, Gaussian, GAMESS, MEEP, MPB, FEMLAB

**Programming** Python, Ruby, C/C++, JavaScript, HTML/CSS, x86 Assembly

**Databases** SQLite, SQL Server, NoSQL

**Numerical/symbolic computing** MATLAB, SciPy, Mathematica

## Languages

**Farsi** Native

**English** Fluent

**French** Fair

## Test scores

**GRE General, October 2008** Verbal: 530/800 (68%), Quantitative: 800/800 (94%), Writing: 4.0/6.0 (37%)

**GRE Physics, October 2008** 940/990(92%)

**TOEFL iBT, August 2010** 117/120

**TOEFL iBT, August 2008** 115/120

**TOEFL PBT, December 2004** 633/670

## Service

**Head** Resana Science<sup>5</sup>, 2008–2009

**Team Guide** 38<sup>th</sup> International Physics Olympiad, July 2007, Isfahan, Iran

**Jury Member** Giffoni Film Festival, July 2000, Giffoni, Italy

## Other interests

**Arts** Typography, photography, calligraphy, abstract art

**Music** Traditional Iranian, classical, jazz, [alternative/progressive] rock

**Humor** British sketch comedy

**Sports** Swimming, badminton

**Other** Philosophy and ethics, history and biographies, reading and [contributing to Wikipedia](#)

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<sup>4</sup>Young Scholars Club is the regulating body for national and international scientific Olympiads in Iran.

<sup>5</sup>Resana Science is the name collectively given to independent research by the student community in the Department of Electrical Engineering, Sharif University of Technology.