

# Naomi Rom - Curriculum Vitae

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## Personal Information

**Name:** Naomi Rom

**Born:** Israel, 1966

**Tel:** 972-524-291-829

**Army Service:** 1984-1986

**Languages:** Hebrew, English

## Education

- **1989-1995: D.Sc. in Chemistry, Technion – Israel Institute of Technology, Haifa.**  
*Dissertation topic: “Determination of Tunneling Rates through Potential Barriers”.* Thesis supervisor: Prof. Nimrod Moiseyev.  
Developed several algorithms to calculate chemical reaction rates in systems supporting resonances. Used complex scaling methods with grid algorithms and matrix calculations.
- **1986 – 1989: B. Sc. in Chemistry (Cum Laude), Technion – Israel Institute of Technology, Haifa.**
- **1983 - 1984: Foothill Junior College, Los Altos Hills, California.**
- **1982 - 1983: Paly High School, Palo Alto, California.**
- **1978 - 1982: Alliance High School, Haifa.**

## Employment Experience

- **2019 - present: Rafael.**  
*Head of Systems Reliability and Safety Center.*
- **2003 – 2019: Rafael.**  
*Research scientist and Reliability engineering.*  
Work topics include: Modeling of materials properties; ReaxFF Molecular Dynamics Simulations; RAMS engineering (from 2014).
- **2009 - 2010: Fritz Haber Institute for Molecular Dynamics, Hebrew University, Jerusalem.**  
*Visiting Research Scientist, collaboration with Prof. Ronnie Kosloff.*  
Reactive molecular dynamics simulations of energetic materials.
- **2000 - 2003: OpTun Ltd, Haifa.**  
*Team leader of Architecture and Data Management group.*  
Work topics include: Optical devices design; Architecture design of various integrated optical devices; Switching algorithms and functionality; Products layout; Packaging adaptation.
- **1997 - 2000: Rafael.**  
*Research scientist.*  
Work topics include: Simulations and modeling of materials properties.
- **1995 - 1997: University of California at Los Angeles (UCLA).**  
*Postdoctoral Fellow with Prof. Daniel Neuhauser.*  
Developed a new Complex Monte Carlo electronic structure algorithm and applied it to several molecular systems.

### Research Grants

- **2016 – 2019:** Principle Investigator of a MAFAAT grant, entitled “Multi-Scale Modeling of Composite Materials Failures”. The grant was shared with the PI’s: Prof. Ronnie Kosloff (Hebrew University), Prof. Simcha Srebnick (Technion), and Dr. Ofir Shor (Rafael).

### Teaching and Instructing Experience

- **2018 - 2020: Co-instructor of three engineering graduation projects of five students at Azrieli College of Engineering:**
  - “*Molecular Meta Dynamics Simulator for Composed Materials*”, Michal Gabay and Shira Yerushalmi, Software Engineering, 2020.
  - “*Studying the Properties of Amorphous Plastic Material by Modeling Basic Principles focusing on Mechanical and Thermal Properties*”, Sameer Nasser Aldeen and Wadie Ayoubi, Advanced Materials Engineering, 2019.
  - “*Molecular Meta Dynamics Simulator for Composed Materials*”, Ofek Barazani, Software Engineering, 2019.
- **1989 - 1995: Teaching assistant in undergraduate and graduate Chemistry faculty courses in the Technion.**

The courses include: General chemistry, physical chemistry, quantum chemistry, and computational chemistry. In addition, was instructor in physical chemistry lab.

### Computing Experience

- Code development and usage of various physical and chemical simulations.
- Scientific programming: Matlab and Fortran 90.
- Working in Unix and PC environments.
- Word, Power Point, Excel.

### Awards and Scholarships

- **1994:** Special excellence scholarship, the Gutwirth Foundation, Technion.
- **1991:** Regular excellence scholarship, the Gutwirth Foundation, Technion.
- **1991:** Travel and participation scholarship for first EPS Southern European School of Physics on “Dynamical Processes in Molecular Physics”.
- **1988: (1)** Kolthoff Prize, Technion; **(2)** Amos de Shalitt scholarship for summer school, Weizmann Institute of Science.
- **1988:** The Technion President Prize for excellence in studies.
- **1987:** The Technion President Prize for excellence in studies.
- **1986:** The Technion Dean Prize for excellence in studies.

### **Naomi Rom - List of Publications**

1. "Decomposition of Condensed Phase Energetic Materials: Interplay between Uni- and Bimolecular Mechanisms", D. Furman, R. Kosloff, F. Dubnikova, S. V. Zybin, W. A. Goddard, III, N. Rom, B. Hirshberg, and Y. Zeiri, *J. Am. Chem. Soc.* 2014, 136, 4192-4200.
2. "First-Principles-Based Reaction Kinetics for Decomposition of Hot, Dense Liquid TNT from ReaxFF Multiscale Reactive Dynamics Simulations", N. Rom, B. Hirshberg, Y. Zeiri, D. Furman, S.V. Zybin, W.A. Goddard, III, and R. Kosloff, *J. Phys. Chem. C* 2013, 117, 21043–21054.
3. "Density-Dependent Liquid Nitromethane Decomposition: Molecular Dynamics Simulations Based on ReaxFF", N. Rom, S.V. Zybin, A.C.T. van Duin, W.A. Goddard, Y. Zeiri, G. Katz, and R. Kosloff, *J. Phys. Chem. A* 2011, 115, 10181–10202.
4. "Shifted-contour auxiliary-field Monte Carlo for molecular electronic structure", N. Rom, E. Fattal, A. K. Gupta, E. A. Carter and D. Neuhauser, *J. Chem. Phys.* 1998, 109, 8241.
5. "Shifted-contour auxiliary-field Monte Carlo: Circumventing the sign difficulty for electronic-structure calculations", N. Rom, D.M. Charutz, and D. Neuhauser, *Chem. Phys. Lett.* 1997, 270, 382-386.
6. "Scattering matrix elements by a time independent wave packet complex scaling formalism", N. Rom, J. W. Pang, and D. Neuhauser, *J. Chem. Phys.* 1996, 105, 10436.
7. "Transition-state resonances by complex scaling – H+H<sub>2</sub> and H+MuH", N. Rom and N. Moiseyev, *J. Phys. Chem.* 1994, 98, 3398-3406.
8. "Absorbing boundary conditions by the partial integration exterior scaling method", N. Rom and N. Moiseyev, *J. Chem. Phys.* 1993, 99, 7703.
9. "Cumulative reaction probability by the complex coordinate scattering theory", N. Rom, V. Ryaboy and N. Moiseyev, *J. Chem. Phys.* 1993, 98, 6327.
10. "Thermal rate constants of multi-mode systems for the price of one: aziridine", N. Rom, V. Ryaboy and N. Moiseyev, *Chem. Phys. Lett.* 1993, 204, 175.
11. "Thermal rate constants in collinear atom transfer reactions by optimizing the position of the reactants/products dividing surface", *J. Chem. Phys.* 1992, 96, 8307.
12. "Tunneling rates in a two-dimensional symmetric double-well potential surface by the exterior scaling procedure", N. Rom, N. Moiseyev and R. Lefebvre, *J. Chem. Phys.* 1991, 95, 3562.
13. "Optical potentials by the complex coordinate method", N. Rom, N. Lipkin and N. Moiseyev, *Chem. Phys.* 1991, 151, 199-204.
14. "Tunneling rates in bound systems using smooth exterior complex scaling within the framework of the finite basis set approximation", N. Rom, E. Engdahl, and N. Moiseyev, *J. Chem. Phys.* 1990, 93, 3413.