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Education:

Ph.D., Chemical Physics, the University of Colorado, Boulder 1994
M.S., Computer Science, the University of Colorado, Boulder 2003
B.S., Chemistry, the University of Texas, 1989

Research:

- Simulation of Chemical Reactions using Time-dependent wave packet propagator using fast Fourier Transform (publications 1-5)

- Simulation of photodissociation Dynamics of CO₂ in the upper atmosphere using electronic structure calculation and wave packet propagator simulators. The work involved collaborating with the experiments done at Brown University in Peter Weber's laboratories. (publication 6)

- Simulation of Reaction in the bulk using Monte Carlo simulation (publication 10)

- Simulation of Reactions using Electron-Nuclear Dynamics for reaction of electrons with gaseous oxygen, hydrogen (University of Florida).

- Developed a faster Data Base using Oracle 8i (Dell Inc., Austin, TX)

- Kinetic modeling of combustion of methane using Runge-Kutta and techniques in the field of non-linear dynamics. The experiments were done at Argonne National Laboratories where we obtained the necessary rate-constants required for the simulations.

Employment History:

8/2021 to Present:	Associate Professor of Instruction Department of Chemistry University of Texas at San Antonio
8/2012- 8/2021	Senior Lecturer, Department of Chemistry University of Texas at San Antonio
8/06	Visiting researcher, Department of Chemistry & Biochemistry, Texas Tech University
12/06	Visiting Scientist, Department of Chemistry & Biochemistry, University of Colorado
9/05 –08/2020	Senior Lecturer, The University of Texas at San Antonio
7/05 – 8/05	Research associate, Physical Organic Chemistry, Department of Chemistry & Biochemistry, University of Colorado at Boulder
8/01- 5/05	Lecturer, University of Colorado, Department of Chemistry

- 1/99 – 1/01 Lecturer, The University of Texas at San Antonio, Department of Chemistry
- 1/01-8/01 Dell Inc., Data Base Analyst
- 5/95-1/99 Post-doctoral research, The University of Florida,
Gainesville, FL
- 4/95 - 8/95 Visiting Scientist, Physikalisch-Chemisches Institute
Universitat Heidelberg, Heidelberg, Germany
- 8/91 - 12/91 Visiting Scientist, Institute Theoretical Physics,
Santa Barbara, CA
- 8/89 - 4/94 Teaching Assistant, University of Colorado, Boulder,
Department of Chemistry.

Courses Taught:

Academic Inquiry & Scholarship:
AIS 1203

Chemistry:

Basic Chemistry, General Chemistry 1 and 2, Quantitative Topics (Advanced Calculus), Physical Chemistry 1 and 2, Graduate Quantum Chemistry, Chemical Kinetics and Dynamics, General Chemistry 2 Laboratory coordinator (Fall 2012 to present)

Mathematics:

Calculus 1, 2, 3 (taught at UTSA Department of Mathematics from Summer of 2006 to Fall 2018)

Publications:

1. "High Energy Transition State Resonances in the H+ H₂ Reaction"; Sadeghi, R.; Skodje, R. T.; J. Chem. Phys. 98, 9208 (1993).
2. "Spectral Quantization of High Energy Transition State Resonances in the H+ H₂ Reaction"; Sadeghi, R.; Skodje, R. T.; J. Chem. Phys. 99, 5126 (1993).
3. "Spectral Quantization of Transition State Dynamics for the Three Dimensional H+ H₂ Reaction"; Skodje, R. T.; Sadeghi, R.; Krause, J. L.; Koppel H.; J. Chem. Phys. 101, 1725 (1994).
4. "Barriers, Thresholds, and Resonances: Spectral Quantization of the Transition State for the Collinear D+ H₂ Reaction"; Sadeghi, R.; Skodje, R. T.; J. Chem. Phys. 101, 1725 (1995).
5. "Spectroscopy of Potential Barriers: An Analytic Line-Shape Formula for Broad Resonances"; Sadeghi, R.; Skodje, R. T.; Phys. Rev. A 52, 1996 (1995).
6. "Control of Transition State Spectra: Enhancement of Diffuse Structure in the Photodissociation Spectrum of CO₂"; Sadeghi, R.; Skodje, R. T.; J. Chem. Phys. 105, 7504 (1996).
7. "Quantum Dynamics at the Transition State: Spectral Quantization and

Spectral Control applied to the FH_2 Photodetachment Process"; Skodje, R. T.; Sadeghi, R.; and Krause, J. L.; J. Chem. Soc. Faraday Trans. 93, 765 (1997).

8. "Control of Transition State Spectra: A Variational Algorithm"; Skodje, R.T.; Sadeghi, R.; and Krause, J. L.; Chemical Physics 240 (1999).

9. "Structure and Dynamics of the S_3 State of CS_2 "; Sadeghi, R.; Krause, J. L.; Skodje, R. T.; J. Chem. Phys. 107, 6570 (1997).

10. "The Dynamics of Proton Transfer in a Water Chain"; Sadeghi, R.; Cheng, H-P.; J. Chem. Phys. 111, 2086 (2000).

11. Coherent State Dynamics of $\text{H}^+ + \text{HF}$ reaction at $E_{\text{lab}}=30 \text{ eV}$ ", Maiti, B., Sadeghi, R. Morales, J., Chem. Phys. 340, 105 (2007).

12. "Dynamics for the Dynamic Frank Harris: Exploring $\text{H}^+ + \text{CF}_4$ Reaction at $E_{\text{Lab}} = 20$ and 30 eV ", B. Maiti, P. M. McLaurin, R. Sadeghi, S. A. Perera and J. A. Morales, *International Journal of Quantum Chemistry*, **109**, 3026-3035 (2009).

Work in Progress:

Time-dependent semiclassical approach to a highly activated complex molecule", Sadeghi, R., (in preparation)

Conferences Attended and Presentations

2/95 Poster Presentation "Control of Reaction Dynamics", Sanibel Annual Symposium, St. Augustine, FL

6/95 Invited Speaker "Photodissociation Dynamics of CO_2 ", The Southeastern Conference on Theoretical Chemistry, Florida State University, Tallahassee, FL

10/96 Speaker, Chemistry Colloquium "Transition State Spectroscopy", Quantum Theory Project, University of Florida, Gainesville, FL

8/97 Poster Presentation "Resonance in Chemical Reactions", The Conference in Theoretical Chemistry, Park City, Utah.

2/98 Poster Presentation, Annual Sanibel Symposium, St. Augustine, FL

5/98 Invited Speaker "Proton Transfer in water-wires", The Southeastern Conference on Theoretical Chemistry, Florida State University, Tallahassee, FL