



Birla Institute of Technology & Science, Pilani

Pilani Campus

Shamik Chakraborty, Department of Chemistry

07th December, 2020

ADVERTISEMENT FOR PROJECT FELLOW / JRF POSITION

Applications are invited for one position of JRF (leading to Ph.D. from BITS Pilani) in a DST-SERB project "**Investigation of the nature and origin of intermolecular Se-H \cdots X (X = O, N, S and Se) hydrogen bonding interactions using matrix isolation infrared spectroscopy and theoretical calculations**" at the Department of Chemistry, Birla Institute of Technology and Science, Pilani.

Project Summary: Hydrogen bonding interaction governs the properties of solvents, solute-solvent interactions, crystal structure, various biological activities, and modification of materials for potential applications. Active research aims to recognize new hydrogen bond motifs to expand the library of hydrogen bond donors and acceptors. Recently, organoselenium chemistry and selenium biochemistry have developed as an independent field of research. Still, very little is known about the role of selenium in hydrogen bonding interaction. The present proposal aims to investigate intermolecular Se-H \cdots X type of interactions in weakly bound complexes. The weakly bound complexes would be formed under cold conditions, on the surface of the spectroscopic target, using **matrix isolation technique**. Experimental and theoretical results would be combined to determine the nature and origin of selenium centered hydrogen bonding interaction.

* Working set-up of matrix-isolation infrared spectroscopy is available in the group. Good knowledge of experimental science will be useful. Working knowledge of any electronic structure calculation program will be preferred.

Duration of the Project: 3 years

Eligibility Criteria: M.Sc. in Chemistry (Physical chemistry specialization and Mathematics in B.Sc.)/M. Tech. with at least 60% marks. A candidate with CSIR-NET/GATE qualification will be preferred. Experience in several of the following areas is of advantage but not mandatory:

- (1) UV-VIS absorption and fluorescence spectroscopy
- (2) Synthesis and characterization of molecules using simple methodology
- (3) Molecular Physics
- (4) Quantum chemistry
- (5) Command over computer programming

Fellowship: As per DST norms.

How to apply: Interested candidates are encouraged to send application and detailed CV with a cover letter to undersigned on or before 6th January, 2021.

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