



**Birla Institute of Technology & Science, Pilani**

Pilani Campus

Shamik Chakraborty, Department of Chemistry

23rd March, 2017

### 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 "**Probing the Nature of Intermolecular X-H...Se (X = O and N) Hydrogen Bonding Interactions using Matrix Isolation Infrared Spectroscopy**" 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 X-H...Se 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.

\* Experimental set-up for Matrix-Isolation Infrared Spectroscopy would be developed. Good knowledge of experimental science will be useful. Working knowledge of any electronic structure calculation program will be preferred.

Phone: +91 1596 5176 (Off), Fax: +91 1596 244183

E-mail: [shamik@pilani.bits-pilani.ac.in](mailto:shamik@pilani.bits-pilani.ac.in)/[Chakraborty.shamik@gmail.com](mailto:Chakraborty.shamik@gmail.com)





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**Duration of the Project:** 3 years

**Eligibility Criteria:** M.Sc. in Chemistry/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 15<sup>th</sup> April.

Shamik Chakraborty (Principal Investigator)

Department of Chemistry,  
BITS Pilani, Pilani 333031, Rajasthan, India.

E-mail: [shamik@pilani.bits-pilani.ac.in](mailto:shamik@pilani.bits-pilani.ac.in)

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Phone: +91 1596 5176 (Off), Fax: +91 1596 244183  
E-mail: [shamik@pilani.bits-pilani.ac.in](mailto:shamik@pilani.bits-pilani.ac.in)/[Chakraborty.shamik@gmail.com](mailto:Chakraborty.shamik@gmail.com)

