

Advertisement for Postdoctoral Associate (Research Associate- I) position in OUSUMS lab

<http://www.physics.iisc.ac.in/~aksy/>

Last date of online application: 15th May 2026

Project Summary

The project is based on the exploration of correlated physics in moire superlattices using Rydberg exciton sensing, integrating electrical and optical characterization in both steady-state and dynamical regimes. This project is supported by an Advanced Research grant under ANRF.

In moire system twist angle and lattice mismatch are the key experimental parameters that modify band structures, leading to flat bands. These flat bands enrich the system with remarkable physical properties, including correlated states. Recently, we have demonstrated “quantum siphoning” in the reconstructed MoSe₂/WSe₂ heterostructure (HS) (<https://doi.org/10.1021/acs.nanolett.6c00578>) and exciton-phason coupling in WSe₂/WS₂ HS through ultrafast spectroscopy (<https://doi.org/10.48550/arXiv.2601.03045>). An emerging trend (<https://doi.org/10.1038/s41586-020-2868-6>) shows that correlated states can be probed using Rydberg excitons. We aim to study these states in transition metal dichalcogenide (TMD) and graphite-based HS with Rydberg exciton of sensor layer. Our first step is to design and fabricate dual-gated HS, to control doping (n) and displacement field (D) individually. Then, we will characterize them using steady-state optical measurements: white light reflection and photoluminescence (PL) by varying n and D. We will proceed to dynamical characterization (Pump-probe and time-resolved PL) of the emergent states.

Responsibilities and Duties

Conduct research experiments mentioned above, analyse data, write reports and manuscripts, mentor undergraduates, and regularly meet with the adviser and research group.

Required Qualifications

Applicants must have a PhD in Physics/Nanoscience/related fields.

Required Experience and Skills

Experience with mechanical exfoliation and stacking of 2D materials, Fabrication of Devices (preferably using electron beam lithography), CW and ultrafast lasers, Absorption/Photoluminescence spectroscopy, Time-resolved spectroscopy, electrical measurements, etc. is necessary. In your CV/resume, please mention experience and expertise regarding using specific instrumentation/software. The format of the CV is given on the next page. Without mentioning the level of expertise, the application will not be evaluated.

Benefits and Salary

Regular training on techniques and career mentoring will be provided. Salary will be as per DST norms for Postdoctoral Researcher/ Project Scientist (58,000 + HRA). Hostel accommodation will not be provided.

Job Type: Full time

Initial 3-month contract, which will be extended as per satisfactory performance and mutual discussions. The applicant should be able to work in the position for at least one year. Beyond one year, extension is subject to performance.

Starting: 15th June 2026 (preferred, but negotiable)

Send your CV/Resume and any additional relevant information to ousumslab.phy@iisc.ac.in. The format of the CV is given on the next page. The subject line of the email must be “Advertisement for Moire Postdoc”, otherwise the application will not be evaluated.

Reference letters will be required at a later stage.

CV/Resume

1. Name and full correspondence address:

2. Email(s) and contact number(s):

3. Institution:

4. Date of Birth:

5. Academic Qualification (10th, 12th and undergraduate, postgraduate):

	Education	Year	Subject	University/school board	% of marks
1					
2					

6. Work/Research experience (in chronological order)

S No.	Positions held	Name of the Institute	From	To

7. Equipment/software experience

S No.	Equipment/Setup	Expertise (time spent, judge yourself on 1-5 scale with 1 being no experience, and 5 being expert)
1	Fabrication of devices (mention lithography techniques used)	
2	Optical Setup (free-space optics)	
3	Mechanical exfoliation and Stacking of 2D materials	
4	Photoluminescence, Raman	
6	Time-resolved spectroscopy	
7	Electrical Measurements	

8. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by applicant

S No.	Name of award	Awarding agency	Year

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9. Publications (*List of **all** papers published in SCI Journals, in year wise descending order*).

S No.	Author(s)	Title	Name of journal	Vol	Page	Year

10. Google Scholar link

11. Any other information