Advertisement for Junior Research Fellow (JRF) position in OUSUMS lab
http://www.physics.iisc.ac.in/~aksy/
Last date to apply is 25th June 2024

Introduction to the group: We are the OUSUMS Lab at Physics, IISc. We fabricate 2D materials (Transition Metal Dichalcogenides, Graphene, etc.) based heterostructures with controlled twist angle to study their optical properties. We use time-resolved and steady-state optical spectroscopy methods, as well as synthesize materials, for next-generation optoelectronics and to uncover novel physical phenomena.

Job Summary: The role of the JRF will be to design and perform research experiments, analyse results and write reports and manuscripts. The project focuses on creation of an automated transfer system that can create arbitrarily complex heterostructures (stacks) of 2D materials. For this purpose, you will co-develop (in collaboration with the Mechanical Engineering Department at IISc) a novel robotic assembly that achieves precise layered assembly of 2D materials through synergistic motion control of a motorized stage and a manipulator.

Responsibilities and Duties: Conduct research experiments, maintain lab notebooks and meetings regularly with the adviser. You will automate layer number identification, the creation of the 2D material library, and highly complex stacking of heterostructures via positioning algorithms. Specifically, you will develop a code to automate the process of locating 2D flakes on the substrate after mechanical exfoliation, and capturing images using the motorized stage and microscope. Next, you will work on layer identification and library creation i.e. create a data library to save images and position coordinates of 2D flakes. Finally, you will create algorithms and experimental protocols for stacking layers for creating heterostructures. Then, you will have the opportunity to measure the optical properties of the fabricated heterostructures using custom optical setups in our lab. This project involves image analysis, complex algorithms, instrumentation, and optical experiments.

Required Qualifications: Applicants must have background in Physics/Engineering-Physics/Nanoscience and must have obtained an equivalent degree to B.Tech/M.Sc/M.Tech. Additionally, they must have cleared CSIR-UGC NET including lectureship (assistant professorship), GATE, or an equivalent national exam.
Required Experience and Skills: Past experience with Programming/Coding, Lasers, mechanical exfoliation of bulk crystals, Raman spectroscopy etc. is necessary. In your CV/resume, please mention experience and expertise regarding use of Raman Spectroscopy, Photoluminescence, and experience with Programming Languages. Without mentioning the level of expertise, the application will not be evaluated.

Benefits and Salary: The project is highly collaborative, and is expected to lead to many high-impact publications and patents. Regular training on techniques and career mentoring will be provided.
Salary will be as per DST JRF norms (37,000 + HRA). If you have not cleared any of the national exams mentioned above, you will be paid as per DST Project Associate-I norms (25,000 +HRA). Hostel accommodation will not be provided.

Job Type: Full time
Initial 3 months 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 availability of funds and performance.

Starting of position: around 15th July 2024 (flexible)

Send your CV/Resume and any additional relevant information to ousumslab.phy@iisc.ac.in . Format of CV is given in the next page. The subject line of the email must be "Advertisement for JRF_stacking", otherwise 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 (10^{th}, 12^{th} 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/coding experience

S No.	Equipment/Coding	Expertise (time spent, judge yourself on 1-5 scale with 1 being no experience, and 5 being expert)
	Programming Languages (any of Python, Matlab, C++): mention the language	
	Raman spectroscopy	
	Photoluminescence	

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

S No.	Name of award	Awarding agency	Year

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

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

10. Any other information