



OFFICE OF INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036

Advertisement No.: ICSR/PR/Advt.183/2024 Dated: 18/11/2024

Applications are invited for the temporary post of Research Associate – I, Department of **Metallurgical and Materials Engineering, IIT Madras.**

Co-ordinator: Rohit Batra, Department of Metallurgical and Materials Eng., IIT Madras.

Duration: Initially for 6 months, later extendable based on the performance.

Number of Vacancies: 01

S.No	Post	Qualification and Experience	Pay
1	Research Associate I	Educational Qualification: Ph.D Desirability: Degree in following fields: Computer Science and Engineering, Electrical Engineering, Physics, Chemical, Metallurgical and Materials Engineering. Preferred experience: Machine learning, Python programming, Phase transformation in materials	Rs 58,000/- Per month + HRA (as applicable)

Position Summary

Materials informatics lab at IIT Madras is seeking a highly motivated and talented individual to join our team as Research Associate I. This opportunity is part of a DRDO funded project focused on developing high temperature shape memory alloys. This project is a joint collaborative effort between IIT Madras, IISc and NAL Bengaluru.

In this project, we aim to combine machine learning (ML) techniques with first principles density functional theory (DFT) to identify alloy compositions which can show high temperature shape memory effect with low hysteresis. Using existing data on alloys, and additional data generated by our collaborators (IISc), machine learning models will be built to identify alloy compositions and processing parameters that show high temperature shape memory effect. The ML suggestions will be synthesized and characterized in IISc for validation in an active learning format. There will be a need to develop various types of ML models, including graph based (GNNs), CNN based (image processing), and even large language models (LLMs) to learn transformation temperature of alloys, process their microstructure images and extract information from research articles. Further, NAL will work on optimizing the alloy processing conditions for large scale production as per the guidance from the DFT and ML methods.

Responsibilities

- Build various types of ML models (LLMs, U-Net, NNs, etc.) to learn various properties of alloys, such as transformation temperatures, microstructural features from images, etc.
- Build an LLM based pipe line to extract alloy data from literature. This will involve using techniques such as prompt engineering, RAG, fine tuning and model evaluation
- Work along with the DFT expert to select good alloy composition candidates. DFT can help provide useful features as input to the ML models
- Plan and execute the project including report writing
- Credit relevant courses (as per the recommendation) in the institute to build the background to start working on the research problems.
- Contribute towards works related to teaching/research work assistantship.
- Collaborate effectively with multidisciplinary teams

The last date for submission of online application is 02.12.2024.

General Instructions to the candidates

- 1) All the positions are on purely contract basis.
- 2) The completion of the period of contract will not confer any right for further extension, regularization, permanency at the Institute.
- 3) Candidates should apply online only in the website <https://icandsr.iitm.ac.in/recruitment/> - **(Please check the advertisement number Advt. 183/2024 displayed and submit the application for the relevant position).**
- 4) Separate application has to be filled for each post.
- 5) The system will accept single application only with the registered login ID (email) for an advertisement, hence the candidate is requested to select the multiple positions (In case, the candidate wishes to apply for more than one position) before the submission of application.
- 6) The application cannot be edited, reverted once it is submitted.
- 7) Candidates should not attempt to apply twice for the same post. If multiple applications are received from a candidate for the same post, the candidature will liable to be rejected.
- 8) Candidates should follow the prescribed procedure for submission of online application.
- 9) Candidates are advised to fill their correct and active e-mail addresses in the online application as all correspondence will be made by the Institute through e-mail only.
- 10) The candidates applying for any post should ensure that they fulfil all the eligibility conditions for the post. Their admission to any stage of the selection process will be purely provisional subject to confirmation that

they satisfy the prescribed eligibility conditions. Mere issue of registration certificate / call letter to the candidate will not imply that the candidature has been found eligible.

- 11) After successful online submission of application, a print out of the application form must be obtained and submitted when called for test. It will be required at the time of document verification/test/interview. Hard copy of the application is NOT to be sent to the Institute.
- 12) Candidates must be citizens of India. Persons who have migrated from Pakistan with the intention of permanently settling in India or subjects of Nepal are also eligible, but in their case a certificate of eligibility from the Government of India will be necessary for appointment. Such candidates should apply to the Government of India in the Ministry of Home Affairs for necessary certificate and furnish satisfactory proof of having so applied.
- 13) The prescribed qualifications are minimum and unless specified, they are required for consideration for the post, even if higher qualification has been acquired and the mere fact that a candidate possesses the same will not entitle them for being called for interview.
- 14) Relevant experience gained after the minimum qualifying degree will only be taken into consideration. Minimum requirements of qualifications and/or experience can be relaxed in respect of exceptionally outstanding candidates.
- 15) The experience required is relaxable at the discretion of the Institute in the case of candidates belonging to the Scheduled Caste / Scheduled Tribe, if at any stage of selection, the competent authority is of the opinion that sufficient number of candidates from these communities possessing the requisite experience are not likely to be available to fill up the vacancy reserved for them.
- 16) The Institute reserves the right to restrict the number of candidates for written / skill test / interview to a reasonable limit on the basis of qualifications, level and relevance of experience higher than the minimum prescribed in the advertisement and other academic achievements. The Institute also reserves the right of rejecting any or all the applications without assigning any reasons therefore.
- 17) Calling a candidate for test/interview merely indicates that it is felt that the candidate with others may be suitable for the post and conveys no assurance whatsoever that they will be recommended or selected or their conditions specified in the application will be accepted.
- 18) Candidates will be short-listed for Test/Interview on the basis of the information provided by them in their online applications. They must ensure that such information is true. If at any subsequent stage or at the time of Test/Interview any information given by them or any claim made by them in their online applications is found to be false, their candidature will be liable to be rejected.
- 19) The Institute shall verify the antecedents or documents submitted by a candidate at any time at the time of appointment or during the tenure of the service. In case, it is detected that the documents submitted by the candidates are fake or the candidate has clandestine antecedents/background and has suppressed the said information, then their services shall be liable to be terminated.
- 20) In case of any inadvertent mistake in the process of selection which may be detected at any stage even after the issue of appointment letter, the Institute reserves the right to modify/ withdraw/ cancel any communication made to the candidates.

- 21) Applicants who are working in **any one of the Project at IIT Madras**, must apply through proper channel otherwise they will be required to produce No-Objection Certificate at the time of document verification/Test/Interview. Candidates without NOC will not be permitted to appear for Test/Interview.
- 22) Candidates may send testimonials from persons intimately acquainted with their work and character. If the applicant is in employment, the candidate should submit testimonials from the most recent employer or immediate superior as a referee.
- 23) The Institute has a right to decide the mode of screening and testing the applicant for short listing and selection.
- 24) The Institute solely reserves the right not to fill any advertised position without assigning any reason
- 25) Only shortlisted applicants will be contacted.
- 26) No correspondence whatsoever will be entertained from candidates regarding conduct and result of test/interview and reasons for not being called for interview. Canvassing in any form will be a disqualification.
- 27) The crucial date for determining the eligibility criteria for all candidates in every respect shall be the prescribed closing date for submission of online application.
- 28) The Institute strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.
- 29) Any corrigendum/clarifications on this advertisement, if necessary, shall be uploaded on website and no separate communication will be sent for this purpose.
- 30) If there is any issue to submit the application please send E-mail to : recruitment@imail.iitm.ac.in / icsrrecruitment@iitm.ac.in **Contact: 044- 2257 9796** on all working days from **9.00 AM to 05.30 PM (Monday to Friday – except National Holidays)**. (Please note, only technical issues will be accepted – No interim correspondence with reference to the selection process will be considered).
- 31) **Instructions to apply online:-**Eligible applicants would require to register and apply online through <https://icandsr.iitm.ac.in/recruitment/> and submit the application.

Sd/-

Head–HR
Office of IC&SR
IIT Madras