इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली

हौज खास, नई दिल्ली -110016

(औद्योगिक अनुसंधान एवं विकास इकाई)

INDIAN INSTITUTE OF TECHNOLOGY DELHI

Hauz Khas, New Delhi-110016

(Industrial Research & Development Unit)

No. IITD/IRD/RP04463G/ 167719 Dated:22/06/2023

Advertisement No.: IITD/IRD/122/2023

Applications from Indian nationals are invited for Project Appointment under the following project. Appointment shall be on contractual basis with consolidated pay, renewable yearly or upto the duration of the project, whichever is earlier. निम्नलिखित परियोजना के तहत भारतीय नागरिकों से आवेदन आमंत्रित किए जाते हैं। अपॉइंटमेंट, अनुबंधित आधार पर समेकित वेतन, नवीकरणीय वार्षिक या परियोजना की अवधि तक, जो भी पहले हो, के साथ होगा.

About the Project: Microstructure modification is essential in achieving mechanical property improvements, specifically in metallic materials for engineering applications. One of the ways the modification can be achieved is through severe plastic deformation (SPD). SPD process intensifies the crystal lattice defects leading to higher dislocation density thus resulting in an exceptional grain refinement in the material. This enhances strength and toughness without any other coupled processes. Equal channel angular pressing (ECAP) is the most recommended SPD process. In general, SPD process on Ti alloys is complicated; however, it is possible to deform them by ECAP process-based thermo-mechanical treatment (TMT), while considering at elevated temperatures. This is referred as hot-ECAP process. The considered study would focus to increase the strength on metastable β-Ti alloys by grain refinement through hot-ECAP process. The unique advantage of this alloy is that they exhibit stressinduced martensitic phase transformation (SIMT) during deformation, leading to an additional plasticity and eventual increase in strength-ductility relation of the material. The main role of the RA would involve optimizing the hot-ECAP processing parameters to achieve maximum grain refinement in β-Ti alloys, and eventual microstructural and mechanical characterization to achieve enhanced strength-ductility combination using advanced tools e.g., hydraulic press involving temperature chamber, x-ray diffraction, Scanning and transmission electron microscopy, quasi-static/in situ mechanical testing etc. The day-to-day job responsibilities would include: a. Lead the team's research activity in this area. b. Conduct required fabrication, testing and characterization c. Mentor PhD/Master's students in the group and aid in writing original research articles and presenting in conferences. Also, help writing new project proposals d. Deal with problems that may affect the achievement of research objectives and deadlines e. Carry out administrative tasks related directly to the delivery of the research.

Title of the Project	Influence of hot-equal channel angular pressing (hot-ECAP) on the microstructure-mechanical properties optimization via stress-induced martensite in metastable Beta Ti alloys (RP04463G)	
Funding Agency	Science and Engineering Board (SERB)	
Name of the Project Investigator	Prof. Suresh Neelakantan [email ID:sureshn@iitd.ac.in]	
Deptt/.Centre	Department of Material Science & Engineering	
Duration of the Project	Upto:12/02/2026	
Post (s)	Consolidated Pay-slab / Fellowship	Qualifications
Research Associate-I (1)	Rs.47,000/-p.m. plus HRA @ 24%	Ph.D. in Materials/Metallurgical Engineering related areas with specific expertise in thermo-mechanical processing, microscopy, mechanical properties and metal forming. Preference would be given for candidates possessing expertise on: SPD processes such as equal-channel angular pressing; handling hydraulic/sintering presses with controlled temperatures and FEM modelling using commercial softwares.

The candidates who are interested to apply for the above post should download Form No. IRD/REC-4 from the IRD Website (http://ird.iitd.ac.in/rec) of IIT Delhi and submit the duly filled form with complete information regarding educational qualifications indicating percentage of marks/division, details of work experience etc. by e-mail with advertisement No. on the subject line to Prof. Suresh Neelakantan at email id:**sureshn@iitd.ac.in**

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IIT Delhi reserves the right to fix higher criteria for short-listing of eligible candidates from those satisfying advertised qualification and requirement of the project post and their name will be displayed on web link (http://ird.iitd.ac.in/shortlisted) alongwith the online interview details. Only short-listed candidates will be informed for online interview. In case any clarification is required on eligibility regarding the above post, the candidate may contact Prof. Suresh Neelakantan at email id: **sureshn@iitd.ac.in**

5% relaxation of marks may be granted to the SC/ST Candidates. In case of selection of a retired/superannuated government employee, his/her salary will be fixed as per prevailing IRD norms. अनुसूचित जाति / अनुसूचित जनजाति के उम्मीदवारों को अंकों की 5% छूट दी जा सकती है. एक सेवानिवृत सरकारी कर्मचारी के चयन के मामले में उसका वेतन वर्तमान आईआरडी मानदंडों के अनुसार तय किया जाएगा **The last date for submitting the completed applications by e-mail is 05/07/2023 by 5.00 p.m.**

23/6/2023

सहायक कुलसचिव, आईआरडी

वितरण

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- Webmaster, IRD : To put advertisement at IITD website.
- Notice Boards
- Advertisement file
- Prof. Suresh Neelakantan, PI, Department of Material Scince & Engineering
- Copy to Chairperson, DRC/CRC