इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली
हौज खास, नई दिल्ली -110016
(औद्योगिक अनुसंधान एवं विकास इकाई)
INDIAN INSTITUTE OF TECHNOLOGY DELHI
Industrial Research & Development Unit
Hauz Khas, New Delhi -110016

No. IITD/IRD/RP04737G_SN/ 078821 Dated:10/03/2025

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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.

Brief description: A SRF vacant position (as per DST norms) exist in the project titled: Optimization, clinical validation and product realization of the dental trauma splint prototype

The candidate would be working under Prof Suresh Neelakantan.

Project description: Traumatic dental injury (TDI) is an injury to the tooth and its supporting structures. TDI are observed in 92 % of all the patients seeking treatment for oral injuries. Immediate repositioning of the displaced tooth to the original position in the socket and stabilization is achieved by means of a dental splint, which is defined as 'A rigid or flexible device or compound used to support, protect or immobilize teeth that have been loosened, replanted, fractured or subjected to certain endodontic procedures'. The splinting aids in pulpal, periodontal healing and prevents further trauma. It is recommended to use a flexible splint for varying time periods depending on the type of injury.

The acid etch wire composite splint is the most commonly used splint in clinical practice. It is recommended to construct the splint using a 0.3-0.4 mm (26-28 gauge) square or round stainless steel or cobalt-chromium wire. Using the acid-etch technique (37% phosphoric acid), composite resin is placed on the labial surfaces of teeth, bonding them together with a wire bent along the dental arch. It fulfils the requirements of splint flexibility and is relatively esthetic and hygienic compared to the other splinting techniques.

However, it is a technique sensitive non-standardised procedure depending upon the expertise of the operator in the use of orthodontic materials. Therefore, to overcome the limitations of currently used splinting materials and techniques and to facilitate the improved management, outcome of TDI, the need arises for an alternate dental splint.

Hence the aim of the current project is to design a flexible, high surface area, aesthetic, hygienic and cost-effective dental trauma splint made of metallic material for stabilization of traumatized teeth. It is proposed to use 3D printed stainless steel and titanium material splints (preliminary R & D results available, including prototype as per selected technology qualifier's criteria).

The main role of the SRF would involve optimizing the Dental trauma splints (amongst SS316L or Titanium material) by subjecting the prototype splint to bond strength, surface roughness and stability level testing and compare with the gold standard titanium trauma splint (TTS) value. The SRF is expected to be familiar with microstructural and mechanical characterization using advanced tools e.g., x-ray diffraction, Scanning and transmission electron microscopy, optical profilometry, quasi-static/dynamic mechanical testing etc. Additional knowledge/expertise on cytotoxicity, relative splint effect and clinical trial studies on the dental materials would be preferable. The SRF is expected to closely collaborate with AIIMS, New Delhi and Industry partner (Zoriox Innovation Labs Pvt. Ltd., Chennai) while executing project activities.

The day-to-day job responsibilities would include:

a. Lead the team's research activity in this area.

b. Conduct required 3D printing related processing, 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 with writing progress reports and new project proposals

d. Coordination with AIIMS and Industry partner (Zoriox) and 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	Optimization, clinical validation and product realization of the dental trauma splint prototype. (RP04737G_SN)	
Funding Agency	Department of Science & Technology	
Name of the Project Investigator	Prof.Suresh Neelakantan [email ID: sureshn@mse.iitd.ac.in]	
Deptt/.Centre	Dept. of Material Science & Engineering	
Duration of the PDF	Upto:10/03/2027	
Post (s)	Consolidated fellowship / Pay-slab	Qualifications
Sr. Research Fellow - (1)	Rs.42,000/-p.m. plus HRA @27%	PhD degree in Materials/Metallurgical/Biomaterials Engineering related areas with specific expertise in additive manufacturing, CAD/FEM modelling using commercial packages, microscopy and mechanical properties. Additionally, preference would be given for candidates possessing expertise on knowledge/expertise on cytotoxicity, relative splint effect and clinical trial studies on dental materials.

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@mse.iitd.ac.in**

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. **Prof. Suresh Neelakantan at email id: sureshn@mse.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 सेवानिवृत्त 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 email is 25/03/2025 by 5.00 p.m.**

10/03/2025

उप कुलसचिव, आईआरडी

वितरण

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- Prof.Suresh Neelakantan, PI, Dept. of Material Science & Engineering
- Copy to Chairperson, DRC/CRC