



University of Madras

(Established under the Act of incorporation XXVII of 1857 –

Madras University Act 1923) (State University)

Centenary Building, Chepauk Campus, Chennai 600 005

Applications are invited for the Temporary Positions of Post Doctoral Fellow/ Project Fellow to work under Research, Innovation and Quality Improvement – RUSA 2.0

Name and Number of Position:

Post Doctoral Fellow : 8 Nos

Project Fellow : 42 Nos

FUNCTIONAL SYNTHETIC MATERIALS FOR BIOMEDICAL APPLICATIONS

THEME -2

Sl. No	Post Code	Title / Research Area	Qualification	No. of Post
POST DOCTORAL FELLOW				
1.	T2 P1 PDF1	Development of efficient, smart dendrimer functionalized nanomaterials for biomedical applications including drug delivery, sensors and anti-cancer studies.	Ph.D in Physical Chemistry/ General Chemistry/ Interdisciplinary with specialization in Dendrimer based functional materials for drug delivery, sensors and anti-cancer studies and also with good experimental skills and sound publications in peer reviewed journals	2
2.	T2 P2 PDF2	Design and Development of Bulk Nanostructured Biomaterials for Orthopaedic and Dental implants and treatment applications	Ph.D in Biomedical Sciences/Physics/ Chemistry/ Nanoscience and Nanotechnology with good experimental skills and publications in peer reviewed journals	2

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3.	T2 P3 PDF3	Functional Synthetic Materials for Biomedical Applications: Nanoparticles and Sensors.	Ph. D degree in CHEMISTRY with specialization in Polymeric Materials, Nanoparticles and Sensors	2
4.	T2 P4 PDF4	Theory, Simulation and Algorithm Development (Development of Novel Materials for Biomedical Applications)	Ph.D degree in 'Physics/ Electronics Science/ Materials Science or an equivalent degree' with First Class. (Thesis submitted may also be considered) Specialisation:- Nano / Micro sensor modelling, Simulation, Fabrication and Testing techniques (or) Laser, BioPhotonics, Upconversion Nano Materials, Cancer Bioimaging (or) Theoretical Condensed Matter Physics with experience of working with the software VASP (or) Magnetism/Medical Physics and Bio-Medical (or) Solid theoretical background in quantum mechanics and optics with experience in computational materials science.	2
PROJECT FELLOW				
5.	T2 P1 PF1	Synthesis of 3D nano composites for the treatment of bone cancer by preparing g-C ₃ N ₄ –Mg-Sr-Se-HAP&g-C ₃ N ₄ –Se-HAP materials using a cost-effective technique & dendrimers catalytic materials.	M.Sc., Physical Chemistry/ General Chemistry	1
6.	T2 P1 PF2	Multifunctional Graded drug loaded anti corrosive composite coating consisting of Ti-TiO ₂ -nHAP-β-TCP-GO-collagen by Electrophoretic deposition (EPD).	M.Sc., Analytical/ Inorganic/Physical/ Organic/General Chemistry/ Polymer Science	1
7.	T2 P1 PF3	Fabrication of sensing device like Screen printed and 3D Printed electrodes	M.Sc., Inorganic Chemistry/ General Chemistry	1
8.	T2 P1 PF4	Zn- doped - nanoHAP-SiO ₂ – PVA based mesoporous drug loaded smart coatings on stainless steel by electrophoretic deposition	M.Sc., Analytical/ Inorganic/ Physical/ Organic/General Chemistry/Polymer Science	1
9.	T2 P1 PF5	Synthesis of mucoadhesives polymeric micelles....and Preparation of Anisotropic AuNPs and fluorescent Ag/Au NCs with tunable optical properties.	M.Sc., Polymer Science/ General Chemistry	1

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10.	T2 P1 PF6	Synthesis and characterization of gold nanoclusters for spectroelectrochemical determination of breast-cancer causing estrogens.	M.Sc., Physical Chemistry/ General Chemistry	1
11.	T2 P1 PF7	Synthesis of polyheterocyclic scaffolds by visible-light promoted Organic Dyes as photoredox catalysts for the treatment of Anti-cancer and Alzheimer's disease.	M.Sc., Organic Chemistry/ General Chemistry	1
12.	T2 P1 PF8	Fabrication of metal nanocomposites thin films and electrochemical characterization to determine the cholesterol levels in human blood.	M.Sc., Physical Chemistry/ General Chemistry	1
13.	T2 P1 PF9	Hydroxyapatite/mesoporous silica coated metal nanorods with improved degradability as a multi-responsive drug delivery platform	M.Sc., Analytical/ Inorganic/Physical/ Organic/General Chemistry/Polymer Science	1
14.	T2 P1 PF10	Tumor Targeted multifunctional functional nanocomposites of branched gold NPs and carbon dots for Cancer Theranostics - Molecular mediated synthesis of branched gold nanostructures with sizes less than 10 nm.	M.Sc., Inorganic Chemistry/ General Chemistry	1
15.	T2 P2 PF1	Design and Development of HAP- based composites for orthopedic and dental applications	M.Sc., Nanoscience and Nanotechnology/ Physics/ Chemistry/ Biomedical Sciences/ M.Tech., Nanoscience and Nanotechnology	1
16.	T2 P2 PF2	Study the effect of Calcium phosphate (HAP) based magnetic fluid-nanoparticles in Targeted Hyperthermia for cancer therapy application	M.Sc., Nanoscience and Nanotechnology/ Physics/ /Biomedical Sciences/M.Tech., Nanoscience and Nanotechnology	1
17.	T2 P2 PF3	Functionalized Hydroxyapatite- Vitamins based Nanocomposites for sustained release of drug for Bone infection.	M.Sc., Nanoscience and Nanotechnology/ Biotechnology/ Microbiology/ M.Tech., Nanoscience and Nanotechnology	1
18.	T2 P2 PF4	Development of hydroxyapatite based nano-plasmonic bio-strips for non-invasive and point-of-care diagnosis of oral cancer	M.Sc., Chemistry / Nanoscience and Nanotechnology	1

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19.	T2 P2 PF5	Minerals reinforced hydroxyapatite/zirconia stent tablet for bone defect"	M.Sc., (Nanoscience and Nanotechnology/ Biotechnology / Biochemistry)/ M.Tech., (Nanoscience and Nanotechnology/ Biotechnology)	1
20.	T2 P2 PF6	Photo- luminescent hydroxyapatite nanostructures for sensing and imaging applications	M.Sc., in Chemistry/ Inorganic Chemistry/ Physical Chemistry/ Organic Chemistry/ Analytical Chemistry/ Photonics and Bio-photonics /Nanoscience.	1
21.	T2 P2 PF7	Development of Nano-vaccine System for Osteosarcoma based on Nano-Hydroxyapatite and TLR agonists	M.Sc., in Biochemistry/ Biotechnology/ Nanoscience/ Biophysics with or without research experience in Cellular/ Molecular biology	1
22.	T2 P2 PF8	Development of Nanotherapeutics for Osteosarcoma based on Novel Mesoporous Hydroxyapatite composites	M.Sc., Chemistry/ Nanoscience/Material Science	1
23.	T2 P2 PF9	Lattice substituted nano-HAP for direct conversion X-ray sensors in the intra-oral energy range,	M.Sc., Physics/ Material Science/ Nanoscience with or without research experience. Desirable:- One year research experience with a publication in a peer reviewed journal.	1
24.	T2 P2 PF10	Nanoinformatics on the role of Nano-HAP in cancer diagnostics and therapy : Schema and System Design,	M.Sc., Computer Science/MCA (Computer science and Applications)	1
25.	T2 P2 PF11	Nanoinformatics on the role of Nano-HAP in dental : Schema and System Design	M.Sc., Computer Science/MCA (Computer science and Applications)	1
26.	T2 P2 PF12	Nanoinformatics on the role of Nano-HAP in orthopedic : Schema and System Design	M.Sc., Computer Science/MCA (Computer science and Applications)	1
27.	T2 P3 PF1	Synthesis, Characterization of Heterocyclic Compounds and Its Applications to Fluorescent Sensor Materials.	M.Sc., degree in Chemistry	1
28.	T2 P3 PF2	Functionalized Nanomaterials for biosensing applications.	M.Sc., degree in Physics	1

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29.	T2 P3 PF3	Investigation on the biocompatible organic molecule/compound adherence with modified implant surface for improving the biocompatibility.	M.Sc., degree in Chemistry	1
30.	T2 P3 PF4	Synthesis, Characterization of Heterocyclic Compounds and its biological applications	M.Sc., degree in Chemistry	1
31.	T2 P3 PF5	Multi Arm Polyurethane/Cobalt Ferrite Magnetic Nano-composites for Sensor Applications.	M.Sc., degree in Chemistry	1
32.	T2 P3 PF6	Rational designing of fluorescent chemosensors for monitoring the small biomolecular constituents towards clinical bio-imaging applications.	M.Sc., degree in Chemistry	1
33.	T2 P3 PF7	Electrode Fabrication RGO/PEDOT/ NANO HAP Sensor for Detection of Urea, Glucose and Lactic acid.	M.Sc., degree in Chemistry	1
34.	T2 P3 PF8	Fabrication of binary, ternary and quaternary metal compounds for metallic implantable substrates.	M.Sc., degree in Physics	1
35.	T2 P3 PF9	Surface modification of titanium and tantalum alloys by physical/chemical deposition through nano-structured patterns to enhance the bio-compatibility and tribological properties to develop longer life implant devices.	M.Sc., degree in Chemistry/ Physics	1
36.	T2 P3 PF10	Optimization of structural, mechanical, surface and chemical inertness properties of fabricated alloys in both pre and post surface modifications.	M.Sc., degree in Physics/Chemistry	1
37.	T2 P4 PF1	Artificial Olfactory Sensor (Electronic Nose) for Cancer Detection: Surface Functionalisation of Nanoparticles/ Composites and Sensor Fabrication	M.Sc., Degree in Physics with First Class. Desirable:- Experience in nanomaterials, thin film and sensor fabrication.	1

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38.	T2 P4 PF2	Upconversion Nanophosphors for BioPhotonics	M.Sc./ M. Phil., Degree in Physics/Materials Science with First Class Desirable:- Experience in upconversion nanomaterials synthesis and characterization	1
39.	T2 P4 PF3	Artificial Olfactory Sensor for Cancer Detection: Algorithm Development, Simulation, Electronic Circuitry for Signal Acquisition and Processing.	M.Sc., Degree in Physics/ Electronics Science/ Materials Science with First Class. Desirable:- M .Phil., in Scientific Instrumentation	1
40.	T2 P4 PF4	Theoretical/Computational Investigation of Shape Memory Alloys for Neurosurgical Applications	M.Sc. Degree in Physics with First Class. Desirable:- Experience in Theoretical Condensed Matter Physics - DFT based calculations	1
41.	T2 P4 PF5	Upconversion Nanophosphors for Bioimaging, Biosensing and Photodynamic Therapy of Cancer.	M.Sc./ M.Phil. Degree in Physics/Materials Science with First Class Desirable:- Experience in upconversion nanomaterials synthesis and characterization	1
42.	T2 P4 PF6	Magnetic Nanoparticles for Hyperthermia	M.Sc., Degree in Physics/ Materials Science/medical Physics with First Class. Desirable:- Experience in Magnetism/Medical Physics and Bio-Medical	1
43.	T2 P4 PF7	DFT, TD-DFT and FDTD simulation for PDT and Hyperthermia of Nanoparticles	M.Sc., Degree in Physics with First Class. Desirable:- Solid theoretical background in quantum mechanics and optics with experience in Computational Materials Science	1
44.	T2 P4 PF8	Development and Testing of Artificial Olfactory Sensor for Cancer Detection: Simulation and Algorithm Development	M.Sc., Degree in Physics with First Class. Desirable:- Experience in Simulation and algorithm development	1

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45.	T2 P4 PF9	Theoretical/Computational Investigation of Shape Memory Alloys for Neurosurgical Applications	M.Sc., Degree in Physics with First Class Desirable:- Experience in Theoretical Condensed Matter Physics - DFT based calculations	1
46.	T2 P4 PF10	Bioactivity study of Laser processed NiTi Shape Memory Alloy for dental applications	M.Sc., Degree in Physics/ Materials Science with First Class.	1

Instructions:-

- Post Doctoral Fellow Salary Rs.55,000/- per month (Consolidated)
- Project Fellow Salary Rs.18,000/- per month (Consolidated)
- Duration One Year (Extendable depending on performance)
- No TA/DA etc. will be given to attend the interview.
- The post is to be filled up on purely temporary basis. The duration of the post is co-terminable with the project.
- **Last date for submission of the filled in application is 01.03.2021 up to 5.00 PM.**
- The cover should be super scribed as “Application for the post of Post Doctoral Fellow/ Project Fellow post code under RUSA 2.0 Project”
- The Candidates send the application with cover letter along the CV, copies of relevant certificates and proof for experience/publications if any, to **The Registrar, University of Madras, Chennai 600 005, through Post.**
- Applicants may also be submitted their applications **through e-mail** to **c3section.uom@gmail.com**
- The University reserves the right to fill or not to fill up the above posts.

Coordinator
Research, Innovation and Quality Improvement
RUSA 2.0