Applications are invited from eligible candidates for the post of **Senior Research Fellow (SRF)** to work on a project entitled “**Designing and Development of Novel Microfiber Spinning Assembly for Health Care Applications**” at Department of Textile Technology, Anna University, Chennai 600025. **It is a project funded by Council of Scientific and Industrial Research (CSIR), New Delhi.**

The details of the eligibility are given below:

<table>
<thead>
<tr>
<th>Name of the post and number of vacancies</th>
<th>Essential Qualification</th>
<th>Desirable qualifications</th>
<th>Duration</th>
<th>Stipend Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Research Fellow (SRF) – 1No.</td>
<td>M.Tech. Textile Technology / Textile Engineering with B.Tech. in Textile Technology and 60% marks in both the courses</td>
<td>Gate Qualified candidates with experience in fabrication of instruments</td>
<td>3 years</td>
<td>Rs. 22,000/- per month (including HRA)</td>
</tr>
</tbody>
</table>

Interested and eligible candidates are requested to sent their bio data to the following email id - **vrgiridev@yahoo.com** on or before **14-09-2012**.

The shortlisted candidates shall be called for an interview at the Department of Textile Technology, Anna University, Chennai - 600025 and T.A. / D.A will not be provided to attend the interview. **The date of the interview and the time of the written test, if held will be informed to the candidate through email.**

Contact address of the Principal Investigator

Dr. V. R. Giri Dev  
Assistant Professor  
Department of Textile Technology  
Anna University  
Chennai – 600025  
Phone : 044 – 22359248  
Email: **vrgiridev@yahoo.com**
Project Abstract

Micro fibrous webs are thin fibrous web which mimics our Extra Cellular Matrix (ECM). Due it s unique characteristic features such as high surface area to volume ratio, well interconnected pores with high porosity it is playing a pivotal role in biomedical engineering and regenerative medicine. Several techniques offers the production of microfibers such as melt blowing, spun bonding, flash spinning and electrospinning. The present project is aimed at designing a fiber production assembly based on centrifugal force. The proposed set up to be developed is meant for health care applications where different fiber alignment, porosity and strength is required.

The applicants are requested to prepare on the following topics for the interview

Fundamentals of Polymers

Monomers, Polymers, Methods of Polymerization, fiber forming polymers requirement, production of manmade fibers – Melt and solution spinning, Gel Spinning and Liquid Crystal Spinning

Non Woven Technology

Spun bond technology and melt blown technology – Process, modeling and applications

Medical Textiles

Requirements of Scaffolds, Biocompatibility Tests and Fundamentals of Tissue Engineering

Mechanics

Centrifugal and Centripetal Forces, Angular Velocity, Shear forces on fluids, Velocity triangle for single stage radial flow and axial flow machines.
SYLLABUS FOR WRITTEN TEST

Textile Fibres

Classification of textile fibres; Essential requirements of fibre forming polymers; Gross and fine structure of natural fibres like cotton, wool and silk. Introduction to important bast fibres; properties and uses of natural and man-made fibres; physical and chemical methods of fibre and blend identification and blend analysis. Molecular architecture, amorphous and crystalline phases, glass transition, plasticization, crystallization, melting, factors affecting Tg and Tm; Process of viscose and acetate preparation.

Polymer Preparation

Polymerization of nylon-6, nylon-66, poly (ethylene terephthalate), polyacrylonitrile and polypropylene; Melt Spinning processes, characteristic features of PET, polyamide and polypropylene spinning; wet and dry spinning of viscose and acrylic fibres; post spinning operations such as drawing, heat setting, tow-to-top conversion and different texturing methods.

Characterisation of Polymers

Methods of investigating fibre structure e.g., Density, X-ray diffraction, birefringence, optical and electron microscopy, I.R. absorption, thermal methods (DSC, DMA/TMA, TGA); structure and morphology of man-made fibres, mechanical properties of fibres, moisture sorption in fibres; fibre structure and property correlation.

Probability and Statistics

Mean, median, mode and standard deviation; Random variables; Poisson, normal and binomial distributions; Correlation and regression analysis and Design of Experiments.