Neutron sciences are accelerating at MLZ!

Welcome to  Debasish Saha

GNeuS Programme is proud to introduce you to its Fellows, selected within Call 1 in 2021

Few words about you and your research project

I am a new member at the Juelich Centre for Neutron Science-4, joining GNeuS programme as a fellow from 1st September 2022.

In my research project, I will investigate the **interdiffusion of deuterated and protonated polymers making up colloids** (latex particles) that internally diffuse during the film formation, using small-angle neutron scattering (SANS). This project will be done under the supervision of Dr. Henrich Frielinghaus and BASF SE Ludwigshafen will host me for a secondment.

My field of research interest is **experimental soft matter using Small-Angle Neutron Scattering (SANS).** I did PhD in Physical Chemistry from the Westfälische Wilhelms-Universität Münster and the research work was carried out at Forschungszentrum Juelich. After PhD, I worked at CEA Saclay, France and New Mexico State University, USA as a post doctoral researcher.

I was working at the Bhabha Atomic Research Centre as a DST Inspire Faculty prior to joining of the GNeuS project.

What is your background? How have you heard about GNeuS?

In the GNeuS project, I will work in the colloidal system (soft matter) using Small-Angle Neutron Scattering (SANS). I am working in the field of **soft matter and SANS** from the starting of my PhD work at Forschungszentrum Juelich. During my PhD and entire research career, I worked at **different neutron scattering facilities, which includes FRM-II in Germany, LLB in France, PSI in Switzerland, ILL in France, BARC in India, and ANSTO in Australia.**

My scientific research includes different soft matter systems such as microemulsions, nanoemulsions, nanomedicines, polymer nanoparticles, protein-surfactant interactions, multi-component soft matter systems, etc.

I have heard about the GNeuS project from Neutron Digest and also from Dr. Henrich Frielinghaus.

Why did you apply specifically on GNeuS?

GNeuS is an **excellent platform** to develop my career in the field of Neutron Scattering and starting a close collaboration with the industry.

This programme will entitle me to learn different neutron as well as lab-based techniques from the supervision team.

The project also gives me an opportunity to develop my soft-skill ability and to learn some interdisciplinary and intersectoral topics.

I hope that the GNeuS project will help me to **develop my global network** and entitle me to find a **research scientist position** in the industry or academic position in universities or research laboratories.

What impacts do you expect from the GNeuS fellowship?

The major goal of my project is to understand the interdiffusion of polymer and water in colloids for developing the waterborne polymer latex film with an internally ordered structure. Such film can be a potential candidate for **high-performance coating** and to **replace the environmentally hazardous VOC coating**.

From the point of personal achievement, the project will give me an opportunity to develop my professional career as **an independent researcher in neutron science as well as in the industry**. The proposed work will help me to develop a basic understanding and a **hands-on experience of polymer synthesis, film formation of colloids latex particles**, which will certainly contribute to my career growth as such knowledge are essential in chemical industries for product designing, manufacturing, and development. From the scientific point of view, performing classical SANS and NSE will not only enhance my understanding of elastic and inelastic neutron scattering but also about the diffusion processes in materials such as polymer blends, alkane chains, or microemulsions, which are very charming products for industrial as well as daily life applications. **Performing collaborative work between academic institutes and industry will also be advantageous for future collaboration.**

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