# Neutron sciences are accelerating at MLZ!

## Welcome to  Junyang Chen

**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 have obtained my PhD degree in 2022 and my research was focused on neutron source development. My project is about High Brilliance Neutron Source (HBS), that I will implement within Forschungszentrum Jülich in Jülich.

I will conduct the investigation of thermal moderator design for 24 Hz target station by conducting Monte Carlo simulation, using PHITS and Diffmod. The time and energy characteristic of candidate material and structure will be simulated and analyzed.

Then, according to the neutron transportation simulation of different moderator-reflector unit, the specific design will be determined. **This research can be used as the key components for the neutron source facility. Besides, some design ideas are expected as paradigm for next generation neutron source.**

My secondments will be European Spallation Source (ESS) in Sweden and Mirrotron Ltd. in Hungary. ESS is the world's most powerful pulsed neutron source and an outstanding contribution is made for the target-moderator-reflector research. Mirrotron Ltd. is an excellent company which is focused on advanced neutron scattering instrumentation development. These secondments will widen my horizon and enrich knowledge in neutron science.

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

I conducted my research in China Spallation Neutron Source when I was PhD candidate, with a focus on **neutron source development for Boron Neutron Capture Therapy (BNCT).** I worked on lithium target development, moderator-reflector design and neutron measurement for the neutron source, which is used for BNCT [1,2]. More importantly, I am good at Monte Carlo simulation to conduct Target-Moderator-Reflector design. I have a lot of experience for designing reasonable structure to moderate and reflect the neutron.

I heard about GNeuS from Euraxess advertisement, and I found a topic related to High Brilliance Neutron Source TMR design is quite suitable for me. Thus, I decided to candidate.

### *What impacts do you expect from the GNeuS fellowship?*

Firstly, I expect to finish the moderator-reflector design for HBS, which can obtain **comparable neutron flux with lower costs**. This design is expected to be an innovative structure for neutron source facility. And this project can also extend my horizon of my knowledge and skill.

Secondly, I expect to build a strong social network in European neutron community. The GNeuS project gives us a lot of opportunities to expand our network by attending some social and scientific activities.

Thirdly, **I hope the design of neutron source will be the paradigm of next generation neutron source, which will be useful for the neutron community.**

### *Why did you apply specifically on GNeuS?*

The GNeuS programme is focused on neutron source development, which is consistent with my previous research. This project provides lots of training course, which is useful for my career development.

**The HBS project I am conducting in Jülich is quite innovative, as it is expected to lead to the next generation of neutron source.**

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