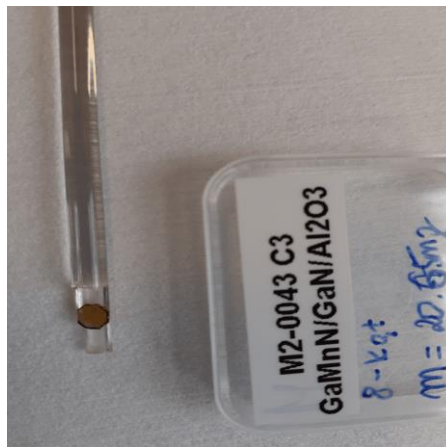
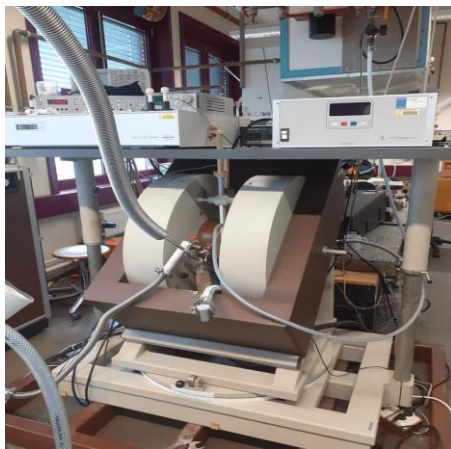


## **Yadhu Krishnan Edathumkandy and Dariusz Sztenkiel @ Johannes Kepler University, Linz, Austria**

### Objectives of the visit

Recently it has been shown that piezoelectricity specific to dilute magnetic semiconductor (Ga,Mn)N affects magnetization by magnetoelectric coupling. Thus it is possible to control the sign and magnitude of single-ion magnetic anisotropy specific to  $Mn^{3+}$  ions in GaN. Our main goal here is to adequately describe the magnetic anisotropy of (Ga,Mn)N and compare FMR experimental findings with our theoretical model. To this end, high quality ferromagnetic (Ga,Mn)N samples were grown by MBE with Mn concentrations ranging from 4% to 7%. Low-temperature FMR measurements have to be performed since the Curie temperature of the studied material is about  $3 \div 6$  K.



### Activities at Linz

We visited the Institute of Semiconductor and Solid-State Physics at the Johannes Kepler University in Linz, Austria, from 25 April to 29 April 2022. The Visit was specially meant to perform low-temperature ferromagnetic resonance (FMR) spectroscopy studies on the (Ga,Mn)N samples in the laboratory of Prof. Alberta Bonnani. During that period, we obtained first-hand practical knowledge on the operation of a ferromagnetic resonance (FMR) spectrometer (helium transfer and data acquisition). Together with the Senior Scientist, Dr. Bogdan Faina, we have successfully performed low-temperature FMR measurements on dedicated (Ga,Mn)N samples and had fruitful discussions on the details of the experiment. We reached a base temperature of  $T=3.3$  K and magnetic fields close to 1 T during our experiments. We hope that we will be able to extract the magnitudes of both uniaxial and Jahn-Teller anisotropies after analysing the data and comparing the experimental findings with our theoretical model. Therefore we hope that we have utilised the mobility time at the Johannes Kepler University effectively and fruitfully.

### Expected outcomes and impact

- Obtained first-hand practical knowledge of the operation of a ferromagnetic resonance (FMR) spectrometer
- It is expected, that the obtained results will form the basis for at least one new publication.