Magneto-optics of magnetic ground states in van der Waals magnetic materials

C. Faugeras[1]

[1]*Laboratoire National des Champs Magnétiques Intenses, CNRS, EMFL, Université Grenoble Alpes, Grenoble, France*

clement.faugeras@lncmi.cnrs.fr

Magnetic van der Waals materials, layered materials with magnetic properties persisting down to the monolayer limit [1], can host a broad variety of magnetic ground states including ferromagnetic, antiferromagnetic, ferrimagnetic, non-colinear phases. These systems have emerged as a particularly well adapted experimental plateform to investigate magnetism in low dimensions. In this talk, I will present how optical probes (Raman scattering, photoluminescence, Infrared spectroscopy) can provide a detailed description of these ground states and how, by coupling them to extreme conditions of low temperature, high magnetic fields and of high hydrostatic pressure, magnetic phases can be manipulated and new phases can be stabilized [2,3].

References

[1] B. Huang et al., Nature **546**, 270 (2017).
[2] A. Pawbake et al., ACS Nano **16**, 12656 (2022).
[3] A. Pawbake et al., NanoLett. **23**, 9587, (2023) ; A. Pawbake et al., Phys. Rev. B **107**, 075421, (2023) ; C.W. Cho et al., Phys. Rev. B **107**, 094403, (2023)