

Students' Annual Webinar

Tailoring magnetisation switching dynamics and skyrmion physics at ferromagnetic/molecular interface

Suman

Interface-assisted molecular spintronics is a growing field that investigates the effect of molecular adsorption on ferromagnetic surfaces. In my talk, I will discuss the results of molecular adsorption in two different kinds of magnetic systems. In the first kind, a ferromagnet Fe /metal- phthalocyanine (MPC) bilayer film, that was recently shown to exhibit an exchange-bias effect^[1], is investigated under different field cooling conditions. Here, magneto-transport studies using planar Hall measurement show that the magnetisation switching mechanism in these exchange-bias systems can be altered by field cooling conditions. Additionally, interface-driven spin-disorder effects were observed in the bilayer films that lead to an unusual temperature dependence of coercivity and exchange bias. Subsequently, my talk will cover the results in the second kind of magnetic system, Cr₂Te₃, a FM with perpendicular magnetic anisotropy (PMA) showing skyrmion physics in thinner films^[2]. Here, the adsorption of MPC molecules on Cr₂Te₃ are shown to affect the PMA signal and promote skyrmion-like phase supported by the observation of topological Hall signals.

References

- [1] S. Mundlia et al., Physical Review Applied, vol. 14, no. 2, p. 024095, 2020.
- [2] D. Zhao et al., Nano Research, vol. 11, no. 6, pp. 3116–3121, 2018.

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10:30 AM