

# **Spintronics with magnetic insulators**

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Magnetic insulators are versatile materials of great technological importance. They attracted much interest from the spintronics community when K. Uchida, E. Saitoh c.s., demonstrated in 2010 thermal and electrical actuation of their magnetization dynamics that allows their integration into conventional electronic and thermoelectric devices.

The most important magnetic insulator is arguably the synthetic yttrium iron garnet (YIG), a ferrimagnet with Curie transitions far above room temperature. Its record magnetic, acoustic and optical quality allowed discovery of entirely new phenomena, such as the spin Seebeck effect and raises the hope for new applications for a sustainable future electronics. Recent progress includes an understanding of the temperature-dependent spin dynamics and the interaction of the magnetic order with the crystal lattice, lasers, and microwaves.

I will present an overview of recent progress in the theory of the spintronics with yttrium iron garnet.