

Atomistic Spin Dynamics of Low-dimensional Magnets

Lars Bergqvist

*KTH, Materials Science & Engineering
SE-10044 Stockholm
Sweden*

We investigate the magnetic properties of a range of low-dimensional systems using a combination of first-principles calculations and atomistic spin dynamics (ASD) simulations. This approach allows us to calculate the ground state and finite temperature properties of experimentally well characterized systems such as Co/Cu(001), Fe/Cu(001) and Fe/W(001), for a range of different thicknesses. Inspired by recent developments in experimental techniques, most notably that of Spin Polarized Electron Energy Loss Spectroscopy (SPEELS), we examine the magnon dispersions of these systems. Our calculated spectra compare well with experimental data in the literature, and allow for an estimation of the role played by temperature in thin magnetic structures. Finally, some preliminary results of magnetization dynamics in ferri magnets, inspired by recent switching experiments by femto second circularly polarized laser pulses, will be presented.