

Polarising supermirrors

A typical example of measurement results for a polarising supermirror is given in Figs. 1. and 2. Fig. 1 shows the reflectivity and Fig. 2 the transmission of the two spin components of the neutron beam.

The mirror was sputtered onto a substrate of 3mm thick float glass, therefore the transmission is quite low. On silicon wafers usually a transmission of 80% is reached. The green curve gives the flip ratio, i. e. the ratio between the intensities for the two components. It should be noted that the flip ratio is divided by the factor 100 to display it at the same scale as the polarisation. The red curve gives the polarisation which is calculated from the difference divided by the sum of the intensities of the two components. The abscissa gives the sample angle on the lower scale in degrees and on the upper scale in multiples of m . The value $m=1$ corresponds to the critical angle of natural nickel. For the wavelength of 4.8 \AA this corresponds to 0.48° .

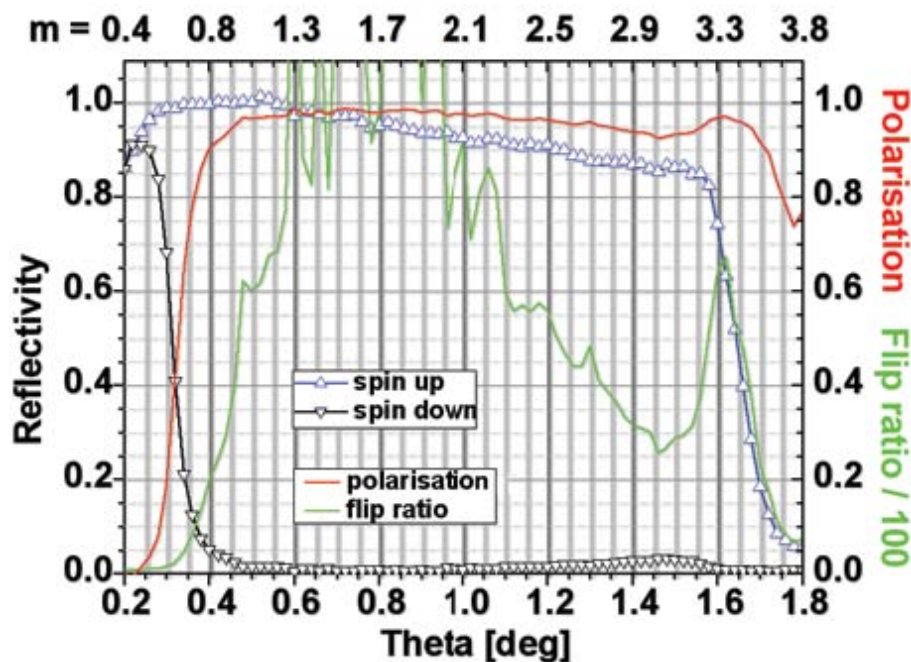


Fig. 1: Reflectivity of a polarising supermirror for the two spin components, together with flip ratio and polarisation.

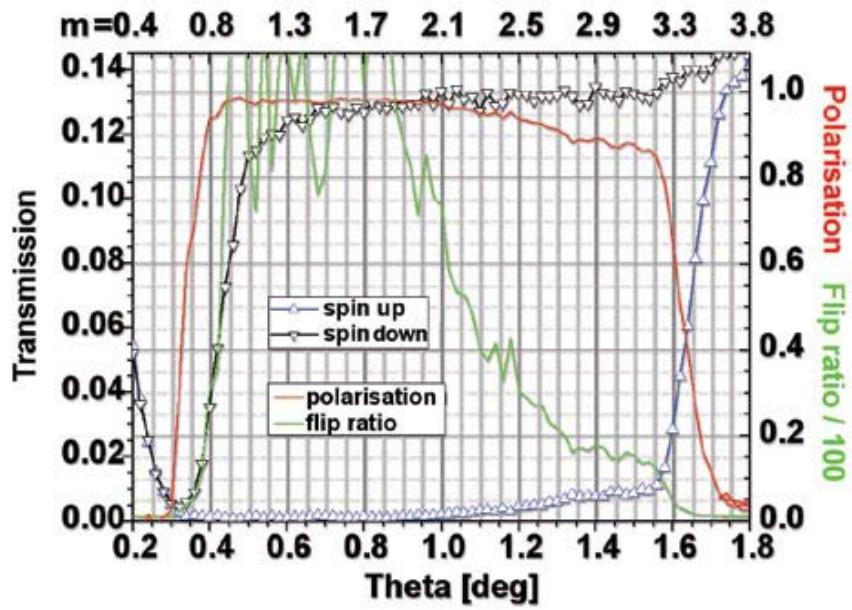


Fig. 2: Transmission of a polarising supermirror for the two spin components, together with flip ratio and polarisation.