

NONCOLLINEAR MAGNETISM CAUSED BY INTERDIFFUSION IN CR FILMS DEPOSITED ON FE SUBSTRATES

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The spin-polarized electronic structure of a mixed Cr-Fe overlayer on a stepped Fe (001) substrate with different atomic arrangements is calculated with a selfconsistent Tight-Binding model with no restriction in the local spin quantization axis and parameterized to ab-initio TB-LMTO results.

We show that the interdiffusion at the Cr/Fe interface, experimentally observed at the first stages of the Cr growth on Fe, originates non-collinear magnetic arrangements within the system and even induces domains in the Fe layers close to the interface when, in addition, monoatomic steps are present at the interface. A comparison of the non-collinear solutions with the most stable collinear arrangements allows to understand the origin of the non-collinearity in terms of the magnetic frustrations.