

## **Myths and truths about magnetism in semiconductor oxides**

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Dilute magnetic semiconductors oxides (O-DMS) are envisioned as sources of spin polarized carriers for future semiconductor devices which would simultaneously utilize the spin and charge of the carriers. Among the most studied oxides are ZnO, TiO<sub>2</sub> and SnO<sub>2</sub> systems, pure and doped (with several transition metals), prepared in the form of powders and films, the latter being grown by different deposition techniques. A great deal of theoretical work has been also devoted to this topic. Claims of room-temperature ferromagnetism, or of the absence of it, have been made by both experimentalists and theorists.

Here, a review of the more recent results on the subject will be presented and discussed, along with the report on some sources of extrinsic ferromagnetism which have been identified in film samples. Our own results in O-DMS powders and films where a main paramagnetic behaviour was observed will be presented.