

Defect-induced magnetism in solids

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In the last years the number of nominally non-magnetic solids showing magnetic order induced by some kind of defects has increased continuously. From the single element material graphite to several covalently bonded non-magnetic compounds, the influence of defects like vacancies and/or non-magnetic ad-atoms on triggering magnetic order has attracted the interest of experimentalists and theoreticians. In my talk I will review and discuss the experimental evidence based on different experimental methods that supports the existence of defect-induced magnetism (DIM) in non-magnetic materials. A comparison with the magnetic order triggered by magnetic d-band ions indicates that the DIM phenomenon is not weaker but the contrary. Taking into account basic concepts on this phenomenon it will be clear that the production of large-mass homogeneous magnetic samples with DIM will remain difficult. Future basic as well as applied activities should concentrate on inducing this phenomenon in rather small samples. A few examples will be given.