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Sommario/riassunto	This thesis reports the results of studies conducted at Laboratory for Molecular Magnetism (LA.M.M.) of the University of Firenze concerning the synthesis and characterization of rare-earth free nanostructured materials for permanent magnet applications. Ferrite-based magnetic materials doped with transition metal ions are studied with particular attention to the correlation between their magnetic properties and nanostructures. Firstly, the magnetic behaviour of single-phase ferrites nanocrystals with enhanced anisotropy was analysed, in order to understand the correlation between the final properties and particle size, shape, crystallinity, composition, etc. Then, hybrid bi magnetic core shell nanoparticles were prepared focusing on the aftermath and required conditions of exchange-coupling establishment between the two moieties.