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Sommario/riassunto Synthesis, toxicology and biomedical applications Index Externally tunable properties allow for new applications of magnetic hybrid materials containing magnetic micro- and nanoparticles in sensors and actuators in technical and medical applications. By means of easy to generate and control magnetic fields, changes of the internal particle arrangements and the macroscopic properties can be achieved. This monograph delivers the latest insights into multi-scale modelling, experimental characterization, manufacturing and application of those magnetic hybrid materials.	Sommario/riassunto	Externally tunable properties allow for new applications of magnetic hybrid materials containing magnetic micro- and nanoparticles in sensors and actuators in technical and medical applications. By means of easy to generate and control magnetic fields, changes of the internal particle arrangements and the macroscopic properties can be achieved. This monograph delivers the latest insights into multi-scale modelling, experimental characterization, manufacturing and application of those	