

Magnetic Nanotechnology for Cancer Therapy and Diagnostics

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An amazing range of new magnetic nanomaterials have been developed by the semiconductor and data storage industry as part of their adoption of spintronic technologies. Most of these materials are focused on the storage, retrieval and processing of digital data, e.g. hard disk drives in the Cloud or new designs of low energy microprocessors. But could these same materials be used for other things, outside of the world of digital data? In this talk I describe how we have re-tasked advanced magnetic nanomaterials for problems in biomedicine. In particular, I show a novel form of cancer therapy based on mechanical disruption of cellular structure using spinning magnetic nanostructures, our work towards early stage detection of kidney cancer using magnetic nanostructures and work on live adherent cells riding on the backs of nanostructured magnetic carriers for drug discovery.

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