

NANOSTRUCTURING PERMANENT MAGNETS FOR GREEN TECHNOLOGIES

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Magnets are essential materials in numerous vital technologies such as energy conversion, automotive industry and medical imaging. Despite their omnipresence in the present-day world, magnetism waited for the rise of the theory of relativity and quantum mechanics to be better understood, and there is still much left to learn. New technologies combating limited resources and climate change are putting an ever-increasing pressure on researchers to develop better magnets for electric cars, green energy turbines and sensors. This is where nanoengineering of magnets comes to play – can we tune the structure of magnets at the nanoscopic or even atomic level in order to make them better? The answer is yes, and in this lecture we will talk about how we can combine theory and experiments, i.e. micromagnetic simulations and magnetic imaging, in order to control the nanostructure of permanent magnets and create better magnetic materials for green technologies.