

The High Field MRI Facility at Penn State

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Magnetic Resonance Imaging (MRI) is a very versatile noninvasive tool which is used mainly in the Life Sciences but also in material research. Especially the fact that diffusion of molecules like water, lithium, or sodium can be visualized and characterized makes MRI an ideal tool to study processes in batteries, drying concrete, and many other materials. Besides structural imaging, temperature changes, PH changes, flow, and many other physical properties can be measured with MRI.

The facility comprises a 7 tesla Bruker BioSpec, a 14 tesla Bruker Avance Neo microimaging system, as well as a SkyScan micro-CT system which will be upgraded next spring. The 14 tesla system was recently upgraded and offers now a one-of-its-kind cryoprobe which increases the already high SNR by a factor of three.

In this presentation, we will outline current projects that are conducted in cooperation with faculty from several departments and highlight MR techniques that could be used to support new research projects.