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# Neutron imaging in materials science

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Imaging techniques based on neutron beams are rapidly developing and have become versatile non-destructive analysing tools in many research fields. Due to their intrinsic properties, neutrons differ strongly from electrons, protons or X-rays in terms of their interaction with matter: they penetrate deeply into most common metallic materials while they have a high sensitivity to light elements such as hydrogen, hydrogenous substances or lithium. This makes neutrons perfectly suited probes for research on materials that are used for energy storage and conversion, e.g. batteries, hydrogen storage, fuel cells, etc. Moreover, their wave properties can be exploited to perform diffraction, phase-contrast and dark-field imaging experiments. Their magnetic moment allows for resolving magnetic properties in bulk samples. This presentation will focus on recent applications of neutron imaging techniques in both materials research and fundamental science illustrated by examples selected from different areas.

**Primary author:** KARDJILOV, Nikolay (Helmholtz-Zentrum Berlin)

**Co-authors:** Dr HILGER, André (Helmholtz-Zentrum-Berlin (HZB)); Dr MANKE, Ingo (Helmholtz-Zentrum-Berlin (HZB)); Dr ZIESCHE, Ralf (Helmholtz-Zentrum-Berlin (HZB)); Dr WORACEK, Robin (ESS); Dr ARLT, Tobias (Helmholtz-Zentrum-Berlin (HZB))

**Presenter:** KARDJILOV, Nikolay (Helmholtz-Zentrum Berlin)

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