

Muon Spin Rotation Spectroscopy Utilizing Muons in Solid State Physics

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Abstract

Over the past decades muon spin techniques (short μ SR) have established themselves as invaluable tool to study a variety of static and dynamic phenomena in bulk solid state physics and chemistry. Common to all these approaches is that the muon is utilized as a spin microprobe and/or hydrogen-like probe. At PSI we have extend the range of application to surface near phenomena, thin film and super-lattice studies. A few topical examples from different active research fields will be presented to demonstrate the power of these techniques. Among the examples will be: the study of vortex-lattices in superconductors, the characterization of magnetic semiconductors, relevant for spintronics, the characterization of complex magnetic structures, dynamics in artificial spin ice, and more.