

A (closer) look below surfaces and at heterostructures with polarized muons

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Positive polarized muons act as a non-destructive, non-invasive, and microscopic probe for local investigations. Over the years they have provided unique information about magnetic, superconducting and other electronic properties of bulk matter. A novel extension of the μ SR technique is given by the availability of μ^+ with 100% spin polarization and whose energy can be continuously varied from 0.5 to 30 keV. This allows depth dependent μ SR-studies of thin films, near surface regions and multilayered structures in the range from ~ 1 nm to ~ 300 nm. After a brief introduction of the present status of this technique, I will overview some experiments including depth dependent studies of thin films and heterostructures of various magnetic and superconducting materials, ranging from cuprates through spin glasses to structures and compounds relevant for spintronics applications.