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SOLID STATE ASTROPHYSICS : PRESENT & FUTURE PROSPECTS

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X-ray observations of astrophysical plasma, given high enough spectral resolution and throughput should allow us to directly probe the chemical composition of astrophysical dust grains. Our present best prospects, for Fe-based grains, have gone with the demise of the XRS on Suzaku. Based on "low" energy laboratory studies of grain candidates at the Lawrence Berkeley National Laboratory Advanced Light Source, I discuss prospects for doing such studies in the soft (< 5 keV) band with extant space-based X-ray instruments such as the Chandra HETGS and XMM-Newton RGS. The requirements of satellite spectral specifications will also be discussed for discerning gas from dust, compared with different kinds of dust.