

The Application of Micro-Analytical Techniques to Extraterrestrial Samples

Dr. Scott Sandford
NASA-Ames Research Center

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Much of the leading-edge science currently being done with extraterrestrial samples requires state-of-the-art microanalytical techniques due to the very small sizes of the samples. Examples of extraterrestrial microsamples include interplanetary dust particles collected in the Earth's stratosphere by NASA aircraft, individual presolar grains found in meteorites, and cometary dust particles returned from Come 81P/Wild 2 by the Stardust spacecraft. These samples are typically smaller than 10 microns in diameter, and contain less than a nanogram of total material that often consists of a diverse mixture of subcomponents. I will provide examples of the scientific importance of these small samples and give some example of what can be learned from them despite their small sizes.