STABILIZATION OF LUNAR CORE SAMPLES; J. S. Nagle, Northrop Services, Inc. and M. B. Duke, NASA, JSC, Houston, TX 77058.

A technique has been developed to prepare thin peels and impregnations of material remaining in lunar cores, which preserve stratigraphic information that cannot be preserved during the initial longitudinal dissection.

The cores are initially dissected longitudinally in 5 mm sections, removing material down to a plane that represents removal of 80 percent of the material. To take thin peels, a controlled thickness of polybutylmethacrylate adhesive is spread onto a plexiglas backing strip, pre-cut to the length and width of the core. The methacrylate surface is wet with a solvent and thoroughly impressed against the flat, dissected surface for 5 minutes, which removes a layer 1 mm or less in thickness. After removal, the fresh face of the peel is sprayed with a surface fixative. This process is repeated and the peels preserved as a permanent record; it will be possible later to remove individual grains from these preparations.

The remaining material is then stabilized with epoxy applied under vacuum. When diluted 1:1 with its solvent, butyl glycidyl ether, and poured under vacuum, the epoxy ARALDITE 506 completely impregnates lunar cores with minimum bubbling and particle displacement. To minimize particle displacement, the core and diluted epoxy are simultaneously loaded into the vacuum chamber, the core chamber is slowly evacuated for 8 hours, and then held under vacuum for 16 more to ensure outgassing of both the core and the epoxy. A mechanical system allows the epoxy to be added gently to the core material. After complete impregnation, the chamber is slowly repressurized, the core removed and cured at 30-35°C. The impregnated core material is secondarily encapsulated in epoxy to form a stable block, suitable for horizontal or longitudinal sectioning. The epoxy selected is suitable for preparation of polished thin sections and is stable in hot caustic used in track etching studies.