

The Use of Millipore Filters in the Preparation of Scanning Electron Microscope Mounts of Particles Less Than 20 Micrometers

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Abstract

Millipore filters form excellent mounting substrates for inorganic particles smaller than 20 micrometers. The filters have sufficient detail for resolution testing or alignment correction but do not contribute to X-ray spectra during modal analysis.

Millipore filters (0.1 micrometer pore size) have been found to be an excellent mounting substrate in the preparation of Scanning Electron Microscope (SEM) mounts of particles of volcanic ash, lunar soil or other inorganic particles smaller than 20 micrometers. In a method modified from that of Jedwab (1973), individual particles are randomly dispersed (Fig. 1) on the surface of a carbon-coated MF-Millipore filter by filtering a solution of Freon containing ultrasonically dispersed particles. The filter is then mounted on a SEM sample stub with polyvinyl acetate (McCandless, 1971) or other suit-

able mounting medium. If non-conducting samples are used, a conductive carbon or gold coating must be applied. The cellulose composition of the filter material does not contribute to X-ray spectra obtained during particle analysis. Charging and contamination build-up are minimized at SEM beam voltages of 15–18 kV. Sufficiently fine detail is observable on the filter substrate for resolution tests or alignment correction (Fig. 2). The random dispersion of the particles allows quantitative size or modal analysis.

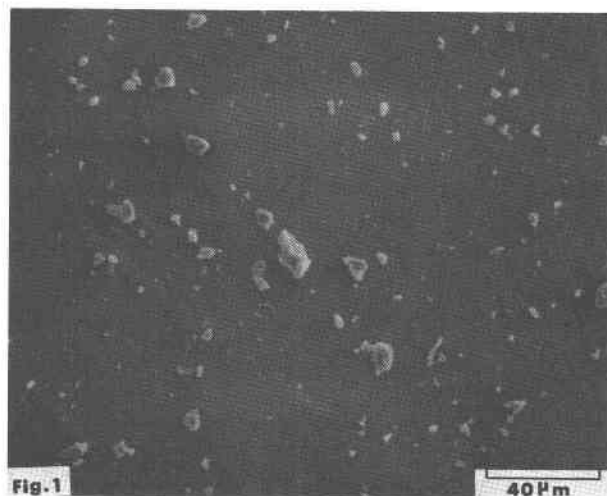


FIG. 1. Random particle distribution on carbon-coated MF-Millipore filter.

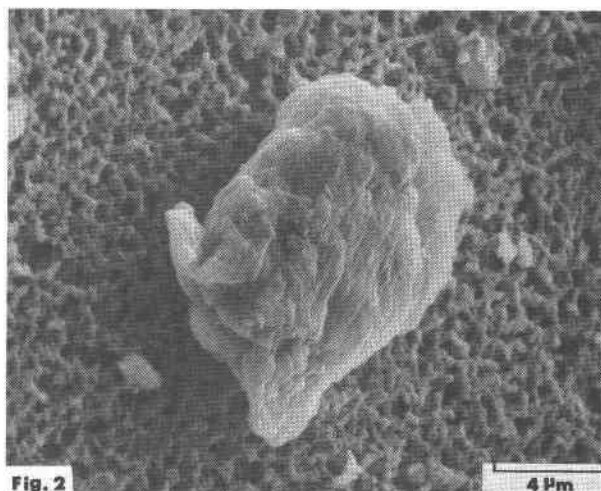


FIG. 2. Glass particle resting on filter substrate; note fine detail of filter material.

References

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Manuscript received, July 12, 1973; accepted for publication, July 18, 1973.