

## Appropriate Quality Control for Filters used in Alpha Spectroscopy Source Preparation

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Recently concerns have been reported to us about the quality of polypropylene filters currently available for use in alpha spectroscopy source preparation. Poor resolution of alpha spectra has been problematic in some lots of filters. We have investigated some of the causes of this problem and have established appropriate quality control methods to ensure more consistent performance of filters for alpha spectroscopy source preparation.

Filters typically are manufactured to meet specifications for removal of particles to result in defined solution purity characteristics. For example, a 0.1 $\mu$  pore size filter is designed to remove 99.98% of particles  $\geq 0.1\mu$  from a liquid. Actual pore sizes present on the surface, however, may be much larger or smaller than 0.1 $\mu$ . Maximum peak resolution in alpha spectroscopy requires as uniform a filter surface as possible to ensure a uniform deposition of the rare earth fluoride precipitate. The reported quality concerns indicate that manufacturing specifications and quality control procedures of existing suppliers may not address the specific needs of the alpha spectroscopist.

Eichrom's new line of Resolve™ Filters (0.1 $\mu$  polypropylene, 25mm dia.) are manufactured to specifications appropriate for alpha source preparation. Filter material is tested using scanning electron microscopy (SEM) to ensure necessary homogeneity of surface pore size distribution. Additionally, a performance test measuring resolution of  $^{241}\text{Am}$  and  $^{243}\text{Am}$  is performed. Specifications on this test are set at FWHM  $\leq 50$  keV for each peak.

Data from a product development and validation study will be presented, including SEM photographs of various lots of material from several suppliers.  $^{232}\text{U}$  and  $^{241/243}\text{Am}$  spectra generated using multiple lots of Eichrom's Resolve Filters will also be included. Additionally performance of the filters in the hands of customers since product launch will be shown.