INVESTIGATION OF ADSORBED MERCURY DISTRIBUTION IN SILVER COATED FILTERS BY X-RAY FLUORESCENCE METHODS

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Abstract:

We have been working on mercury collection from flue gas by amalgamation technique and subsequent XRF analysis [1]. Previous results showed unexpected scattering (30%) in collection efficiency when silver-coated filters were exposed to gas phase mercury in a pilot-scale test chamber. Filters were analysed by micro-XRF, TXRF and conventional XRF to explore the source of scattering. It is concluded from the micro-XRF results that mercury had inhomogeneously adsorbed in the filter as the cause of this variation, and a positive bias of 50 % in the collection efficiency value. Results reported in this presentation suggest the TXRF method is accurate to within ±10 % when X-ray counting statistics are not the limiting factor. This result also calls attention to species distribution in a specimen even in case of isokinetic sampling. Application of this filter in flue-gas measurements will be presented.

[1] S. Kurunczi, Sz. Török, J. W. Beal: Mercury collection from gas phase for XRF analysis, X-Ray Spectrometry, Vol. 28, 352-356, 1999