DETERMINATION OF INDIUM BY ATOM TRAPPING ATOMIC ABSORPTION SPECTROMETRY

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The application of atom-trapping atomic absorption spectrometry with a water cooled silica trap for determination of Indium in an air-acetylene flame was studied. The techniques used were Water-Air System, Flame Alteration and Organic Solvent Atomization. The parameters optimized were heights of collector and slotted quartz tubes above the burner head, fuel flow and suction rate. Organic solvent used for atomization was methyl isobutyl ketone. Data are given showing the improvement in sensitivity and detection limit over conventional flame atomic absorption spectrometry. A water cooled copper tube was used as a collector tube to see if Indium can be trapped more efficiently at the colder surface of a metal tube. In addition, Lanthanum pre-coated silica tube was tried to provide a potentially higher trapping surface. The results obtained for both copper collector tube and Lanthanum pre-coated silica tube showed a slight enhancement of Indium signal. Aspiration of monomers to the flame was tried as an alternative to organic solvent atomization. Monomers which are efficient in producing carbon containing radicals, were thought to enhance the reducing properties of the flame. It was found that styrene aspiration performed well in comparison to the other techniques. For 6 mL/min suction rate and using a 2.0 minutes collection period, detection limits for quartz tube and copper tube were 0.282 mg/L and 0.341 mg/L, respectively, when flame alteration was applied.