Abstract:

The aim of this diploma thesis was to optimize in detail atomization conditions for antimony hydride in a novel plasma atomizer based on a dielectric barrier discharge (DBD) with atomic absorption spetrometric detection. Argon was found as the best DBD discharge gas employing a flow rate of 50 ml min^{-1} Ar while the DBD power was optimized at 30 W. Analytical figures of merit including interference study of As, Se and Bi have been subsequently investigated and the results compared to those found in an externally heated quartz tube atomizer (QTA). The limit of detection reached in DBD (0.15 ng ml^{-1} Sb) is comparable to that observed in QTA (0.14 ng ml^{-1} Sb). Finally, possibility of stibane preconcentration in a DBD atomizer was studied. Preconcentration efficiency of 102 ± 6 % was found under optimized conditions.