عنوان مقاله:

Cloud Point Extraction of Palladium as Chelate with ۱-(۲-pyridylazo)-۲-naphthol Using Triton X-۱۱۴ Prior to Determination in Real Samples by ETAAS

محل انتشار:

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خلاصه مقاله:

A pre-concentration and determination methodology for palladium in real samples at ultra-trace levels by ۱-(۲-pyridylazo)-۲-naphthol (PAN) was developed. The analyte in the initial aqueous solution, acidified with HCl, was complexed with PAN and Triton X-۱۱۴ was added as a surfactant. The surfactant-rich phase was diluted with concentrated HNO۳ (۶۵%, w/w) after phase separation. Then, the concentrations of analyte were determined by graphite furnace atomic absorption spectrometry (GF-AAS). The variables affecting the complexation and extraction steps were optimized. Under the optimum conditions, namely a pH of ۴.۵, a cloud point temperature of ۵۵ °C, the concentration of PAN of ۱.۲×۱۰-۴ mol l-۱, ۰.۱% (W/V) Triton X-۱۱۴, a sample volume of ۱.۰ ml, (centrifuged at ۳۵۰۰ rpm) an enhancement factor of ۲۶-fold was reached. Triton X-۱۱۴ allowed the detection limit of ۰.۰۱ ng ml–۱ of Pd. The precision measured as relative standard deviation (R.S.D.) for ۱۰ replicate determinations at ۱۰.۰ μg l–۱ Pd was ۲.۵%. Analytical graphs were rectilinear in the concentration range of ۳-۲۰۰ μg l–۱ and relative standard deviations were lower than ۵%. The method affords recoveries in the range of ۹۷ to ۱۰۱%. The method was successfully applied for the determination .of Pd in dust, drinking water, and rainwater samples

کلمات کلیدی:

Cloud Point Extraction, Graphite Furnace Atomic Absorption Spectrometry, Pd, ۱-(۲-pyridylazo)-۲-naphthol, Triton X-۱۱۴