

THE INTERACTION OF PALLADIUM(II) WITH QUATERNARY AMMONIUM SALT IMMOBILISED ONTO SILICA GEL SURFACE

The platinum group metals are widely used in industry and medicine. The palladium is the most using metal. The sorption-spectrophotometric methods for the palladium (II) recovery and determination in the form of their chloride complexes by quaternary ammonium salt immobilized onto silica gel surface are proposed. The conditions of formation of palladium chloride, aqua chloride and hydroxochloride complexes in water solution at the different pH and the concentration of chloride ion were calculated using Visual Minteq, ver. 3.0 computer programme. The adsorption of palladium(II) from diluted solution with tetradecyl ammonium nitrate immobilized onto silica gel (TDAN-SG) depending on chloride concentration and acidity of aqueous solution was investigated. The isotherm of adsorption of Pd(II) in form of aquo complex $[PdCl_4]^{2-}$ onto silica gel non-covalent modified with quaternary ammonium salt has a H1-type. This isotherm is formally described by a Langmuir equation and linearized in the coordinates $[C]/a-[C]$ with $a_{max}=13 \mu\text{mol g}^{-1}$. UV/Vis spectra of Palladium (II) in 0,1 M chloride solution at 1,0 pH and ion associate $(TDAN)_2[PdCl_4]$ in chloroform-hexane (1:9) solution were measured. The spectra of non modified and modified with quaternary ammonium salts silica gel were measured by diffuse reflectance spectroscopy and were compared with spectra in solution. The Palladium (II) recoveries from solution due to the formation of ion associate $(TDAN)_2[PdCl_4]$ onto modified sorbent surface.

Key words: sorption, palladium(II), quaternary ammonium salt.