

ABSTRACT

Submitted master thesis is by its character focused on development of polyaniline which would possess attributes typical for monolithic stationary phase. Developed polyaniline aims to be used in capillary liquid chromatography. Accompanying target of submitted master thesis is to provide solutions for variety of complications which follow the preparation of polyaniline in its desired form such as consistency in a form of solutions, gels and pastes, extremely fast polymerization reaction, limited solubility of cross-linking agents, solubility of monolithic polyaniline in polar mobile phases and insufficient bond of polyaniline to the inner wall of fused silica capillary tubing. Solutions for this complications are selection of ideal oxidation agent (ammonium persulfate), cross-linking agent (tris(4-aminophenyl)amine) and porogenic agent (methanol). Also, setting ideal ratio between oxidation agent, cross-linking agent and porogenic agent, heat treatment, choice of suitable mobile phase (tetrahydrofuran), adjustment of capillary wall using silanization agent (3-[3-(trimethoxysilyl)propyl]-aniline) and construction of equipment needed for quick filling of capillaries. Described development concluded in the preparation of solid polyaniline monolith which had a steady bond to the inner wall of fused silica capillary tubing and the optional porosity. Considered disadvantages are inconsistent values of pressure during constant velocity flow of mobile phase and wide variety of results recorded after reproducing of capillaries. Research conclusion shows potential usage of polyaniline in the form of monolith as a stationary phase in the liquid chromatography.

Key words: CLC, polyaniline, monolith, stationary phase

