Water pollution caused by toxic metal ions from various industrial effluents has gained much attention worldwide. Chromium and its compounds are contaminant commonly found in wastewater produced by several industries, including the dye, leather tanning, plating, cement, and photography industries producing large quantities of toxic pollutants. Several methods such as coagulation and precipitation, adsorption, solvent extraction, membrane process and ion-exchange have been used for removal of toxic chromium ions from wastewater [1].

Recently, magnetic separation technologies (MSTs) is gaining growing attention. Magnetite (Fe₃O₄) has been widely used as magnetic material because of their excellent magnetic properties, chemical stability and biocompatibility. Consequently, magnetic polysulfone/thiourea microspheres are regarded as a promising biosorbent for removing Cr(III) due to the strong metal chelating capability and good magnetic separation performance [2].

Polysulfone (PSF) microspheres containing both N-benzoil-N’-(4-klorofenil)tiyoüre (KATU) as extractant and magnetic nanoparticles (Fe₃O₄) that help the isolation operation have been prepared for first time using a phase inversion method. Fourier transform infrared (FTIR), scanning electron microscope (SEM) and thermogravimetric analysis (TGA) have been used to characterize the microspheres. The adsorption of Cr (III) ions from aqueous solutions on to the magnetic microspheres has been studied as a function of contact time, initial ion concentration, adsorbent concentration, temperature and pH. Adsorption data were modeled using Freundlich and Langmuir adsorption isotherms and the appropriate parameters were calculated. The Freundlich equation provided a better fit for Cr(III) ion than the Langmuir equation. Simultaneously, the experimental data fitted the pseudo-second-order kinetic model well.