

Removal of Pb(II) From Aqueous Solutions Using New Carboxylic Acid-containing Absorbent Polymer

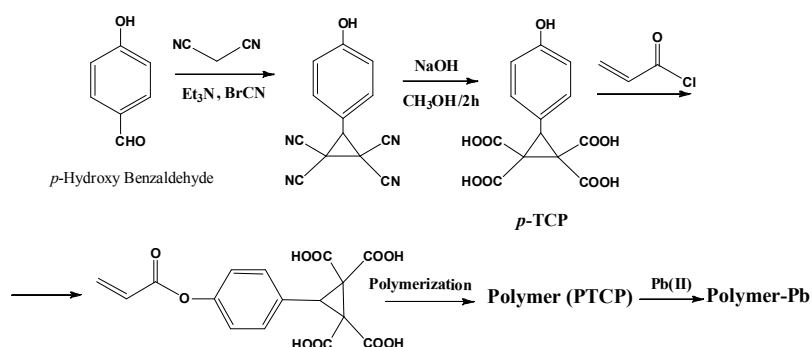
Mehdi Hosseinzadeh¹, Farideh Mahmoodzadeh²

¹Marand Faculty of Technical and Engineering, University of Tabriz, Tabriz, Iran

²Young Researchers and Elite Clube, Marand Branch, Islamic Azad University, Marand, Iran

¹Email: mh_1268@yahoo.com

With the development of industry, heavy metal pollution has become a severe environment issue [1]. Hence, there are needed to remove from the environmental and biological samples. The different method used for their removal from aqueous solution. Among related techniques, adsorption is considered to be the most promising process due to its easy handling, high efficiency and selectivity. Therefore, the effort has been made to design and prepare new sorbent functional polymers with excellent sorption performance. In this study, we attempted to prepare new chelating polymer materials containing carboxylic acid ligands, with high sorption capacity in comparison with the similar polymers, which can be used in wastewater treatment [2]. 3-(4-hydroxy phenyl) cyclopropane-1,1,2,2-tetracarboxylic acid (*p*-TCP) was synthesized by new method and reacted with acryloyl chloride to preparation of *p*-(2,2,3,3-tetracarboxylic acid cyclopropyl) phenylacrylate monomer. Then the resulting monomer was polymerized by free-radical polymerization initiated with benzoyl peroxide to obtain a poly-(2,2,3,3-tetracarboxylic acid cyclopropyl)-phenylacrylate (PTCP) with multi carboxylic acid cyclopropane functionalities in the pendant group as a new polymer [3] and applied to remove Pb(II) from aqueous solution (Scheme 1). The functionalized polymer showed strong adsorption ability to the Pb (II), with the maximum adsorption capacities at pH, 5. The high adsorption rate (<50 min) was seen. The synthesized polymer and its lead chelates were characterized by various techniques.



Scheme.1 Synthesis route of *P*-TCP,PTCP and PTCP-Pb

References

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