

SYNTHESIS AND ADSORPTION PROPERTIES OF LEAD(II) ION IMPRINTED POLYMER (IIP) WITH ETHYLENEDIAMINETETRAACETIC (EDTA) LIGAND

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Abstract. One of the metals that has a high level of toxicity is lead. Various methods of removal of lead ions have weaknesses related to low selectivity. To remove this lead ion, a sophistication method is needed using ion imprinted polymer (IIP). IIP with new material successfully created using a precipitation method with materials as well as ethylenediaminetetraacetic acid (EDTA) (ligand), benzoyl peroxide (BPO) (initiator), methacrylic acid (MAA) (monomer functional), acetonitrile and ethanol (2:1) (porogen), ethylene glycol dimethacrylate (EGDMA) (crosslinker) which have been successfully synthesized. XRD results show that IIP modified with EDTA ligand is amorphous. TGA results show that IIP modified with EDTA ligand has thermal resistance up to a temperature of 385°C. The adsorption capacity of IIP modified with EDTA ligand is 17.8 mg/g with a balance time of 50 min. The isotherm model follows the Langmuir, while the kinetic follows the pseudo-second order. The selectivity results showed good performance on IIP in the presence of zinc(II) and cadmium(II) ion metals.

Keywords: ion imprinted polymer, ethylenediaminetetraacetic acid, adsorption, lead, precipitation polymerization.