

Adsorption properties of mungbean starch/PVA biomaterials for the selective separation of 4-isopropyl phenol as a phenolic compound

김한성, 윤순도[†], 황민진, 변현수
전남대학교

In this study, functional natural polymer-based biomaterials for the selective separation of 4-isopropyl phenol (4IPP) as a phenolic compound are prepared using mungbean starch (MBS), polyvinyl alcohol (PVA), and 4IPP as the target molecule. To improve the selective separation, MBS/PVA biomaterials were also synthesized using benzoic acid (BA) or p-toluic acid (p-TA) which have a similar structure with 4IPP. The physical properties of the prepared biomaterials with UV irradiation time was investigated including their tensile strength (TS), elongation at break (%E), and swelling behavior (SB). The results indicate that the physical properties is improved by UV irradiation process, and the optimal UV irradiation time is about 15 min. The adsorption abilities were evaluated by the adsorption kinetics, binding isotherms, Scatchard analysis, the adsorption of materials with structures similar to templates, and the selectivity factor (α). From the results, it could be verified that the functional MBS/PVA biomaterials have high separation abilities and selectivity.

Keyword : MBS/PVA biomaterials, 4-isopropyl phenol, Physical properties, Adsorption abilities