

Removal of polycyclic aromatic hydrocarbons from scrap tyres by solvent extraction method

이형석^{1,2}, 윤동신^{1,3}, 이승호¹, 유중환^{1,*}
¹요업기술원; ²한양대학교; ³고려대학교
(jwyoo@kicet.re.kr*)

Recently, scrap tyres were used in civil engineering applications in solid fuels, playground surface, rubber roofs, and floor mats. Due to the very toxic emission of PAHs with proven carcinogens, however, a recycling is only possible to limited extent. A number of methods such as wet oxidation, biodegradation, incineration, and solvent extraction are commonly used to remove these PAHs. Among these methods, solvent extraction is an effective method for removal of PAHs from contaminated solids. Herein, we introduce a simply method to remove the PAHs using the solvent extraction process, which is a more environmentally friendly extraction methods of alcohol-water binary systems to enable removal efficiency over 95 % from scrap tyres. To demonstrate the extraction process, we describe the removal efficiency from various extraction parameters such as solubility, alcohol-water ratio, extraction time, and extraction temperature. We have sought out that the removal efficiency of PAHs depends on the solubility, thereby inducing a higher alcohol-water ratio, higher temperature.