

## Re-plasticization of Radiation-Cross-linked Polyethylene Foam Using Supercritical Fluids

이홍식<sup>1</sup>, 조항규<sup>2</sup>, 황승상<sup>2</sup>, 홍순만<sup>2</sup>, 조봉규<sup>3</sup>, 송은석<sup>1</sup>,  
신영호<sup>1</sup>, 이윤우<sup>1,4,\*</sup>

<sup>1</sup>서울대학교 화학생물공학부; <sup>2</sup>한국과학기술연구원;

<sup>3</sup>자원재활용기술개발사업단;

<sup>4</sup>서울대학교 화학공정신기술연구소

(ywlee@snu.ac.kr\*)

In this study, the re-plasticization of radiation-cross-linked polyethylene foam using supercritical fluids was investigated. The reaction was performed in a batch reactor using various supercritical fluids. The effects of parameters such as temperature, pressure, reaction time, and weight ratio of solvent to polyethylene, kind of supercritical solvent on the properties of products were investigated. The characterization of products was performed by gel fraction measurement, GPC analysis, thermal analysis and FT-IR analysis. The cross-linked polyethylene can be completely re-plasticized in the reaction temperature over 380 °C. The molecular weight of re-plasticized products is slightly lower than that of raw linear polyethylene, but the thermal properties of polyethylene don't change so much after treatment.