

### Recycling of Phenol plastic (Bakelite) using Supercritical methanol

조항규, 임종성\*  
서강대학교  
(limjs@sogang.ac.kr\*)

In this paper the method of recycling of phenol plastic (Bakelite) using supercritical fluid was investigated. When phenol plastic(Bakelite) becomes hardened, it forms a 3 dimensional reticulate structure so that it has property of insolubility/infusibility and it is difficult to be recycled but mostly buried, incinerated or used as filler.

For phenol resin, Bakelite (YW-BA-PB) was supplied from Yuwon Corp. and used after cutting into pellet form. As reaction catalysts, methanol (99.5%, Sanchun Chemical), ethanol (99.5%, Sanchun Chemical), acetone (99.5%, Sanchun Chemical) and distilled water were used.

The carbon particles had the same chemical structure, crystal structure, and crystallinity as raw carbon. The phenol plastic (Bakelite) was successfully decrosslinked in supercritical methanol condition. The decrosslinking reaction slightly proceeded until 380°C.

By processing the phenol plastic (Bakelite) using supercritical fluid methods, the following results were obtained. The recycling of carbon is made possible by using supercritical fluid and 2-3 $\mu$ m particles of carbon can be produced according to pressure and constant reaction temperature.