

## Drying of CeO<sub>2</sub> by aerosol solvent extraction system(ASES) using supercritical CO<sub>2</sub>

손원수, 윤용석, 이윤우\*  
서울대학교  
(ywlee@snu.ac.kr\*)

In industry, many kind of metal oxides with surface modifier are synthesized for various purpose and CeO<sub>2</sub> is also one of them. When CeO<sub>2</sub> is synthesized, it is obtained as suspension in organic solvent. If CeO<sub>2</sub> is stored in organic solvent, various problems are occurred such as transportation difficulty, storage difficulty, particle aggregation, volatile solvent, and fire. To overcome these problems, drying process is needed. Conventionally, hot air drying and freeze drying are used as drying process of metal oxides with washing process of residual organic material. In this study, however, aerosol solvent extraction system(ASES) with supercritical CO<sub>2</sub> is suggested as another drying process without washing process because of its advantages like less particle aggregation, less waste water, and less process time compared to conventional drying process. Dried CeO<sub>2</sub> is analyzed by FT-IR, XRD, and HR-TEM. With these analyses, it is confirmed that cerium oxide is completely dried without residual organic material. In perspective of this study, it is thought that drying of other metal oxides by ASES using supercritical CO<sub>2</sub> is also attractive process.