Modeling of Solid I_2 Separation from Saturated $HI-H_2O-I_2$ Solution

이평종, 박병흥*, 정성욱[1], 강경수[1], 강정원[2]
한국교통대학교; [1]한국에너지기술연구원; [2]고려대학교
(b.h.park@ut.ac.kr*)

A mixture of $HI-H_2O-I_2$ is a named solution of HI_x which is a main concerned process flow in Section III (SC3) of sulfur-iodine (SI) process for producing massive hydrogen by using external heat from nuclear or solar. SC3 treats HI_x to separate HI and, then, decomposes HI to obtain H_2. SC3 requires an I_2 separation process to concentrate HI prior to reactive distillation column for HI decomposition. I_2 exhibits high melting temperature compared with HI and H_2O and, thus, solidification would be a promising technique to separate I_2 from I_2-saturated HI_x. In order to develop an equipment modeling would be a good approach for understanding the separation behavior. In this work, we collected physico-chemical properties such as viscosity and density required for modeling and applied a commercial simulation tool to describe 3-D modeling of solid I_2 separation. The calculation conditions were adjusted to investigate the effect of temperature and particle size.