

### Separation of Iodine from HIx Mixture in SI Hydrogen Producing Process by Melt Crystallization

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The Sulfur-Iodine thermochemical cycle (SI cycle) is one of the most promising processes to generate sufficient amount of hydrogen. The formerly announced section III in SI cycle, which consists of concentration, decomposition and separation of HIx mixture, is the most important section because this section determines the hydrogen product yield of SI cycle. To decrease overall energy consumption, the iodine content in HIx mixture has to be reduced before this stream enters the cathode part of EED. Therefore, we recommend the crystallization process of the solid iodine as a separation method. In previous works, research on iodine separation from HIx mixture was performed by batch type crystallizer but in this study, we conducted iodine separation with continuous type crystallizer. Conducting follow-up experiment, samples were taken every 30 minute in upper and lower phase, and each composition was analyzed with auto titration. At temperature of 1 °C and 40 rpm speed of impeller, after 30 minute of residence time, separation of iodine in heavy phase was stably verified.