Separation of Iodine in HIx mixture by crystallization in SI hydrogen generating process

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SI cycle, a thermochemical cycle for decomposition of water with Iodine, Sulfur, is one of the most promising processes to generate sufficient amount of hydrogen. Concentration and decomposition of HIx mixture is the most critical section in SI cycle. This section is the part of the process which determines the hydrogen yield of SI cycle. To enhance the hydrogen efficiency of the cycle, iodine in HIx mixture should be separated and recycled back to Bunsen reactor in HIx concentration section before HI decomposes into hydrogen and iodine. As a separation method, crystallization of solid iodine has been proposed. For the past few years, we've succeeded in measuring iodine solubility in HIx mixture in SLE (Solid-Liquid-Equilibrium). With the given data, we will design apparatus to separate solid Iodine by crystallization. For the first step, we will focus on the confirmation of the growing structure of iodine crystal. It is because the growing nature of iodine crystal is the most critical factor in determining the type of crystallizer. Then, our research will be carried on to measure the experimental data with the crystallizer with respect to different conditions.