REACTION OF LOW CONCENTRATION GASEOUS IODINE WITH CESIUM CARBONATE

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Abstracts

The reaction mechanism of iodine with cesium carbonate is of great importance in nuclear reactors, particularly in the event of an accident. Since the iodine concentrations in such cases are very low, any laboratory scale experiments should be carried out at same concentration level to obtain representative results. In this study, an experimental system was designed to measure the reaction of low concentration gaseous iodine with cesium carbonate powder using an on-line UV-VIS spectrometer system. Iodine gas that was not reacted in the reaction chamber was trapped in a solution containing 0.1 N aqueous NaOH that is a very efficient molecular iodine absorber. The solution was circulated through a flow-through cell of the spectrometer using a peristaltic pump. An absorption peak of iodine trapped in 0.1 N NaOH solution was noted at 220-230 nm ranges. The reaction of the gaseous iodine with cesium carbonate was performed with setting the spectrometer at 228 nm. Both qualitative and quantitative measurements of iodine were possible with this arrangement.