Study on Recovery System for Perfluorocarbon gases

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In general, PFC gases with a very high GWP(GlobalWarming Potential) are used to remove residues generated through typical etchingand CVD(Chemical Vapor Deposition) processes in display manufacturing includingsemiconductors. In recent years, the semiconductor manufacturing process hasbeen progressing with high capacity and high integration according to thevertical lamination structure, and the PFC(Perfluorocarbon) gas used per unitarea of the wafer has been explosively increased due to the increase of thehigh aspect ratio process and the patterning process. These PFC gases arechemically very stable and cannot be decomposed easily, which has a largeimpact on climate change and causes global warming. For this reason, muchresearch is needed on the development of alternative precursors like liquidprecursor with low GWP and recovery systems that can minimize the emission ofby-products with high GWP and additional air pollutants generated during gasdecomposition.

In this study, a recovery system forcooling and condensing high purity PFC gas used in semiconductor processing wasdeveloped and basic research on condensation and recovery was conducted. Inaddition, the study on the analysis of recovered gas components and theimprovement of recovery efficiency by re-vaporizing the condensed gas has beenstudied in parallel.

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