Modeling of Single Wafer Cleaning System with Supercritical CO_2 Drying

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Single wafer cleaning is intorduced ofr high partical removal efficiency and low particle reattachment possibility. But, some trials end up with failures such as water mark defects during iso-propyl alcohol evaporation phase. Superciriticla CO_2 ($ScCO_2$) is known as one of solvents for decrease in failure due to zero surface tension, low viscosity, and high diffusivity. In single wafer cleaning process, supercritical CO2 is supplied to the surface of wet wafers with IPA serving as a rinse agent. IPA on the surface of wafers dissolves in supercritical CO2. After removal IPA from wafers, the pressure in the drying chamber returns to the atmospheric pressure and gasifies and CO2 is purged from the chamber. In this study, single wafer cleaning system with $ScCO_2$ is identified and simulated for the analysis.
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