UV CURE PROCESS AND TOOL FOR LOW K FILM FORMATION

Abstract

A process and system (100) for forming a low dielectric film in a semiconductor fabrication process are disclosed. Initially, a carbon-doped silicon oxide film is deposited on a semiconductor wafer (202). Light energy (206), such as ultraviolet (UV) energy, is then applied to the deposited film to cure the film. In one embodiment, at least 30% of the light energy (206) is at a frequency greater than that of visible light. In the preferred embodiment, the application of the light energy (206) to the wafer does not significantly heat the wafer (202). The invention further contemplates a cluster tool (100) or system (100) suitable for forming and curing the dielectric film. The cluster tool (100) includes a first chamber (102b) coupled to an organosilane source, a second chamber (102a) configured to apply light energy to a wafer received in the second chamber (102a), and a robotic section (104) suitable for controlling movement of wafers between the first chamber (102b) and the second chamber (102a).

FIG. 1 to accompany abstract.