APPARATUSES AND METHODS FOR DEPOSITING
SIC AND SICN FILMS VIA CROSS-METATHESIS REACTIONS WITH
ORGANOMETALLIC CO-REACTANTS

ABSTRACT

Disclosed herein are methods of forming SiC/SiCN film layers on surfaces of semiconductor substrates. The methods may include introducing a silicon-containing film-precursor and an organometallic ligand transfer reagent into a processing chamber, adsorbing the silicon-containing film-precursor, the organometallic ligand transfer reagent, or both onto a surface of a semiconductor substrate under conditions whereby either or both form an adsorption-limited layer, and reacting the silicon-containing film-precursor with the organometallic ligand transfer reagent, after either or both have formed the adsorption-limited layer. The reaction results in the forming of the film layer. In some embodiments, a byproduct is also formed which contains substantially all of the metal of the organometallic ligand transfer reagent, and the methods may further include removing the byproduct from the processing chamber. Also disclosed herein are semiconductor processing apparatuses for forming SiC/SiCN film layers.

FIG. 1



162162



G00002