

ABSTRACT**METHODS FOR CONTROLLING PLASMA CONSTITUENT FLUX AND
DEPOSITION DURING SEMICONDUCTOR FABRICATION AND APPARATUS FOR
IMPLEMENTING THE SAME**

A time-dependent substrate temperature to be applied during a plasma process is determined. The time-dependent substrate temperature at any given time is determined based on control of a sticking coefficient of a plasma constituent at the given time. A time-dependent temperature differential between an upper plasma boundary and a substrate to be applied during the plasma process is also determined. The time-dependent temperature differential at any given time is determined based on control of a flux of the plasma constituent directed toward the substrate at the given time. The time-dependent substrate temperature and time- dependent temperature differential are stored in a digital format suitable for use by a temperature control device defined and connected to direct temperature control of the upper plasma boundary and the substrate. A system is also provided for implementing upper plasma boundary and substrate temperature control during the plasma process.

Fig. 6