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(54) **Title:** ETCHANT TREATMENT PROCESSES FOR SUBSTRATE SURFACES AND CHAMBER SURFACES

(57) **Abstract:** In one embodiment, a method for treating a silicon-containing surface is provided which includes removing contaminants and/or smoothing the substrate surface by a slow etch process (e.g., about <100 Å/min). The substrate is exposed to an etching gas that contains an etchant and a silicon source. Preferably, the etchant is chlorine gas and the substrate is heated to a temperature of less than about 800°C. In another embodiment, a fast etch process (e.g., about >100 Å/min) is provided which includes removing silicon material while forming a recess within a source/drain (S/D) area on the substrate surface. In another embodiment, a method for cleaning a process chamber is provided which includes exposing the interior surfaces with a chamber clean gas that contains an etchant and a silicon source. The chamber clean process limits the etching of quartz and metal surfaces within the process chamber.

WO 2006/083693 A3