

CLEANING PROCESS AND APPARATUS FOR SILICATE MATERIALS

Abstract

A method for treating a surface of a quartz substrate includes preparing a substrate to provide a working surface having an initial roughness; and then ultrasonically acid-etching the working surface to increase the roughness of the working surface by at least about 10%. In one embodiment, the initial surface roughness is greater than about 10 Ra, and in another embodiment the initial surface roughness is greater than about 200 Ra. In a still further embodiment, the initial surface area, if less than about 200 Ra, is increased to greater than about 200 Ra. In other embodiments of the present invention, the working surface roughness is increased by at least about 25% or at least about 50%. Simultaneous with the increase in surface area (as measured by the roughness), the surface defects are reduced to reduce particulate contamination from the substrate.

FIGURE 2