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# Computer modeling of surface interactions and contaminant transport in microstructures during the rinsing of patterned semiconductor wafers

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## **Abstract**

Rinsing microstructures on a patterned semiconductor wafer is modeled. The simulation results are presented for two cases when the surfaces of a trench as the microstructure are made of a single material, or two different materials. The dynamics of contaminant removal from the microstructure surfaces and its dependence on the geometrical structure, physical characteristics of the surfaces, and contaminant diffusivity are presented. The results show that in the case of a trench with two different materials, the cleaning dynamics of the trench bed strongly depends on the stacking order of the materials. When the upper material has a smaller desorption rate coefficient, the dynamics of contaminant transport develops a smaller rate at some point in time that depends on the thickness of the layers.

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