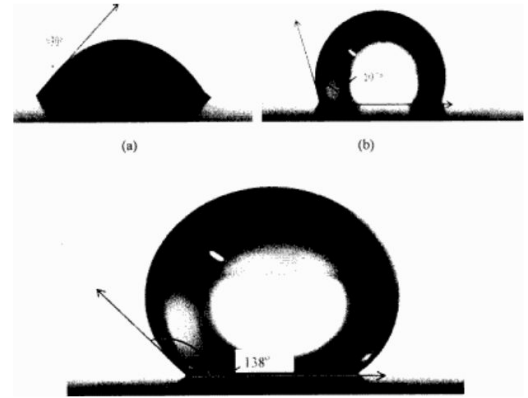




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(IN375419)

## Surface modification of hafnium oxide (HfO<sub>2</sub>) for microfluidic applications



### NEED

The ability to modify the surface of materials like hafnium oxide is crucial for applications in microelectronics and microfluidics. However, traditional methods often fail to achieve the desired hydrophobicity or surface roughness. This new method offers an improved solution.

### TECHNOLOGY OVERVIEW

This invention presents a method to modify the surface of hafnium oxide (HfO<sub>2</sub>) by applying a self-assembled monolayer (SAM) using Octadecyltrichlorosilane (OTS). The process improves hydrophobicity and roughness, with potential applications in microfluidics and microelectronics.

### TECHNOLOGY KEY FEATURES

1. Utilizes Octadecyltrichlorosilane (OTS) self-assembled monolayer (SAM).
2. Enhances hydrophobicity with contact angles up to 138°.
3. Plasma treatment improves surface roughness.
4. Low-cost, efficient method.

[Read more here](#)

### MARKET ANALYSIS

The global surface treatment market for materials, including microelectronics, is growing at a CAGR of 7.5%, driven by increasing demand for advanced materials in industries like semiconductor fabrication and microfluidics. In India, the market for microfluidic applications is projected to grow at 9.2% CAGR by 2033. Source: Global Surface Treatment Market 2023, India Microfluidics Market 2023.

### Target Industries

1. Semiconductor and microelectronics manufacturers.
2. Microfluidic technology developers.
3. Research institutions focused on material science innovations.

### AT A GLANCE

- SDG 9: Industry, Innovation, and Infrastructure, SDG 12: Responsible Consumption and Production

Technology is available for licensing/ co-development.

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