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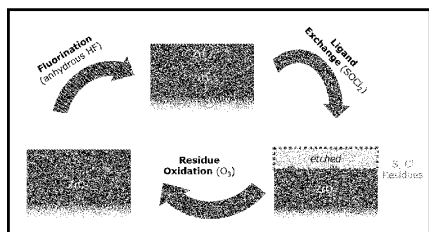
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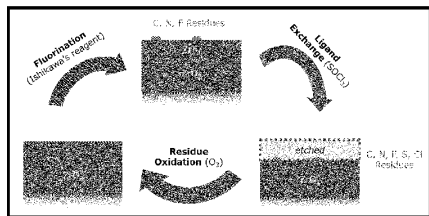
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(54) **Title:** VAPOR-PHASE THERMAL ETCH OF METAL OXIDES



A



B

FIG. 1

(57) **Abstract:** The disclosed and claimed subject matter relates to vapor-phase processes for etching metal oxide films which do not require the use of plasmas or corrosive halogenating gases, including (1) a process for selective removal of a thin layer of oxidized metal-containing material atop a metal such as Mo or W, and (2) a process for performing thermal atomic layer etching (ALE) of films that include ZrO<sub>2</sub>, HfO<sub>2</sub>, (Hf-Zr)O<sub>2</sub> alloy or similar materials. The disclosed and claimed subject matter further includes a metal-insulator-metal capacitor (MIMcap) device with unique properties enabled by ALE of a high-k dielectric film.

[Continued on next page]

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