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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SURFACE TREATMENT OF SEMICONDUCTOR SUBSTRATES USING SEQUENTIAL CHEMICAL APPLICATIONS

(57) Abstract: A system and method for removing polymer residue from around a metal gate structure formed on a surface of a substrate during a post-etch cleaning operation includes determining a plurality of process parameters associated with the metal gate structure and the polymer residue to be removed. A plurality of fabrication layers define the metal gate structure and the process parameters define characteristics of the fabrication layers and the polymer residue. A first cleaning chemistry and second cleaning chemistry are identified and a plurality of application parameters associated with the first and second cleaning chemistries are defined based on the process parameters. The first and second application chemistries are applied sequentially in a controlled manner using the application parameters to substantial remove the polymer residue while preserving the structural integrity of the gate structure.

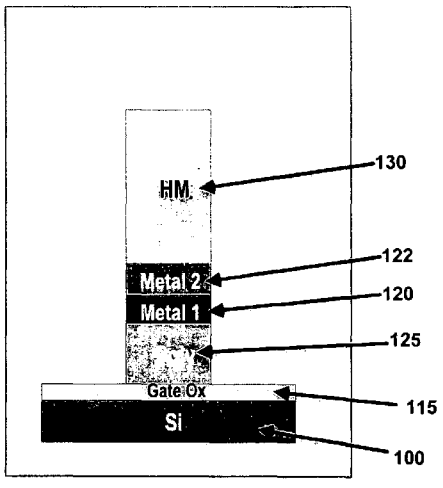


Figure 4A

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