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(54) **Title**: COMPOSITION OF A CLEANING MATERIAL FOR PARTICLE REMOVAL

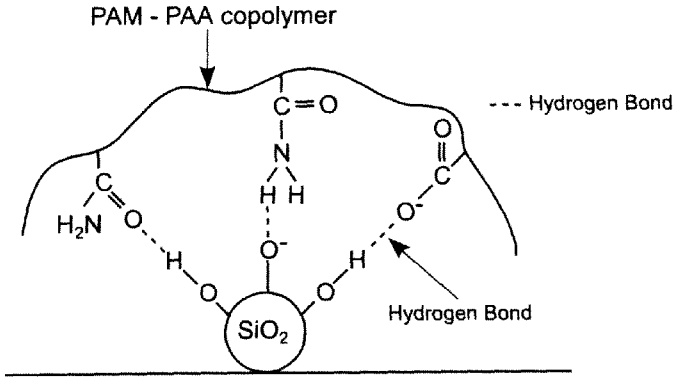


FIG. 2D

(57) **Abstract**: The embodiments of the present invention provide improved materials for cleaning patterned substrates with fine features. The cleaning materials have advantages in cleaning patterned substrates with fine features without substantially damaging the features. The cleaning materials are fluid, either in liquid phase, or in liquid/gas phase, and deform around device features; therefore, the cleaning materials do not substantially damage the device features or reduce damage all together. To assist removing of particles from the wafer (or substrate) surfaces, the polymeric compound of the polymers can contain a polar functional group, which can establish polar-polar molecular interaction and hydrogen bonds with hydrolyzed particles on the wafer surface. The polymers of a polymeric compound(s) with a large molecular weight form long polymer chains and network. The long polymer chains and/or polymer network show superior capabilities of capturing and entrapping contaminants, in comparison to conventional cleaning materials. The polymeric compound(s) of the polymers may also include a functional group that carries charge in the cleaning solution. The charge of the functional group of the polymers improves the particle removal efficiency.

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