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(54) Title: POST-PLANARIZATION DENSIFICATION

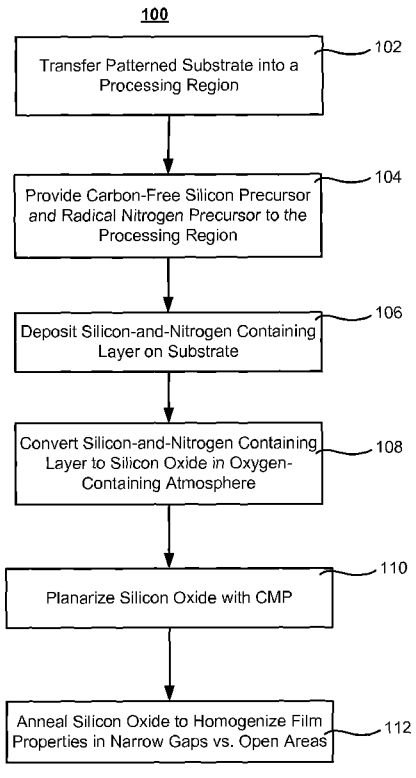


FIG 1

(57) Abstract: Processes for forming high density gap-filling silicon oxide on a patterned substrate are described. The processes increase the density of gap-filling silicon oxide particularly in narrow trenches. The density may also be increased in wide trenches and recessed open areas. The densities of the gap-filling silicon oxide in the narrow and wide trenches/open areas become more similar following the treatment which allows the etch rates to match more closely. This effect may also be described as a reduction in the pattern loading effect. The process involves forming then planarizing silicon oxide. Planarization exposes a new dielectric interface disposed closer to the narrow trenches. The newly exposed interface facilitates a densification treatment by annealing and/or exposing the planarized surface to a plasma.

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