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(54) Title: OPTIMIZED FILM DEPOSITION AND ION IMPLANTATION FOR MITIGATION OF STRESS AND DEFORMATION IN SUBSTRATES

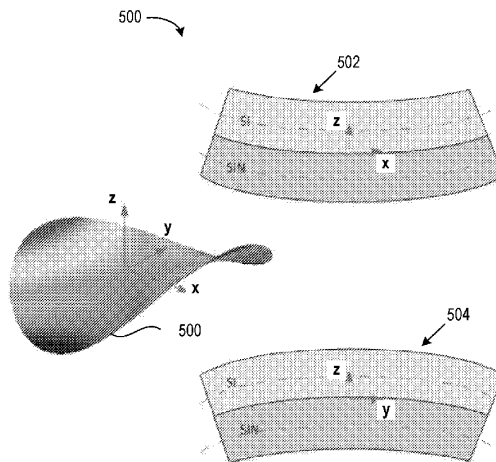


FIG. 5

(57) Abstract: Disclosed systems and techniques are directed to correct an out-of-plane deformation (OPD) of a substrate (e.g., wafer) by identifying, using optical inspection data, a profile of the OPD of the substrate and performing a polynomial decomposition of the profile to determine polynomial coefficients characterizing elemental deformation shapes of the substrate. The techniques further include identifying, based on the polynomial coefficients, characteristics of a stress-compensation layer (SCL) for the substrate and causing the SCL to be deposited on the substrate. The techniques further include performing statistical simulations to identify settings for a non-uniform stress-mitigation irradiation of the SCL, by sampling from one or more statistical distributions associated with previously performed stress-mitigation irradiations, and performing the non-uniform stress-mitigation irradiation of the SCL using the identified settings.

[Continued on next page]

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