CLAIMS

1. A method of reducing wafer distortion, the method comprising:

creating a wafer map of a wafer having at least one field formed on a front side, the at least one field comprising a film, and using a spatial frequency scale to convert the wafer map into a power spectral density (PSD);

depositing a blanket film on a back side of the wafer to reduce wafer distortion to a first distortion; and

using the PSD to perform a field-level film modification of the blanket film on the back side of the wafer to reduce the wafer distortion to a second distortion less than the first distortion.

2. The method of claim 1, wherein the blanket film has a thickness in a range of from 10 nm to 200 nm.

3. The method of claim 1, wherein depositing the blanket film comprises physical vapor deposition of a material.

4. The method of claim 3, wherein the material comprises silicon nitride (SiN).

5. The method of claim 1, wherein the first distortion is paraboloid in shape.

6. The method of claim 1, wherein the blanket film is under compressive stress.

7. The method of claim 1, wherein the blanket film is under tensile stress.

8. The method of claim 1, wherein the blanket film is deposited at a temperature in a range of from 100° C to 500° C.

9. The method of claim 1, wherein performing the field-level film modification comprises exposing the back side of the wafer to ions in a predetermined pattern, the predetermined pattern determined by filtering the power spectral density (PSD) with a strain transfer characteristic of the blanket film to provide a residual PSD.

10. The method of claim 1, wherein performing the field-level film modification comprises exposing the back side of the wafer to photons in a predetermined pattern, the

predetermined pattern determined by filtering the power spectral density (PSD) with a strain transfer characteristic of the blanket film to provide a residual PSD.

11. The method of claim 1, wherein there are in the range of 100 to 400 fields on the front side of the wafer.

12. The method of claim 11, wherein each of the fields is in the range of 10 mm to 30 mm wide.

13. The method of claim 11, wherein each of the fields is in the range of 20 mm to 50 mm long.