CLAIMS

1. A method comprising:

forming a film comprising small molecules on a surface of a substrate to protect the surface, thereby providing a protected surface.

2. The method of claim 1, further comprising:

storing the protected surface in ambient conditions; and

removing the small molecules from the surface of the substrate.

3. The method of claim 1 or 2, wherein said forming a film comprises a vapor comprising the small molecules or a solution comprising the small molecules.

4. The method of claim 2, wherein said removing the small molecules comprises inducing sublimation or evaporation of the small molecules.

5. The method of any of claims 1–4, further comprising, prior to said removing the small molecules, bringing the substrate into a chamber with pressure less than atmospheric pressure.

6. The method of any of claims 1–5, further comprising, prior to said removing the small molecules, converting the small molecules to a more volatile form.

7. The method of any of claims 1–6, further comprising converting the small molecules on the surface of the substrate to a less volatile form prior to said storing the protected surface in ambient conditions.

8. The method of claim 7, wherein said converting the small molecules to a less volatile form comprises photoisomerization.

9. The method of claim 7, wherein said converting the small molecules to a less volatile form comprises photodimerization.

10. The method of claim 7, wherein said converting the small molecules to a less volatile form comprises a Diels-Alder reaction.

11. The method of any of claims 7–10, wherein said converting the small molecules comprises providing a compound comprising one of formulas (**Ia**), (**IIa**), (**IIIa**), (**IVa**), (**Va**), and (**VIII**).

12. The method of any of claims 1–11, wherein the film is formed in a process chamber in which the substrate was immediately previously processed.

13. The method of any of claims 1–12, wherein at least one of the small molecules comprises a compound comprising one of formulas (**I**), (**II**), (**III**), (**IV**), (**V**), (**VI**), and (**VII**).

14. A method comprising:

forming a film comprising small molecules on a surface of a substrate including high aspect ratio (HAR) structures, wherein the film can fill the HAR structures or form within the HAR structures; and

exposing the substrate to a stimulus to induce sublimation of the small molecules.

15. The method of claim 14, wherein said forming a film comprises a vapor comprising the small molecules or a solution comprising the small molecules.

16. The method of claim 14, wherein the substrate including the HAR structures further comprises a first solvent, and wherein said forming the film comprises: displacing the first solvent with a solution including small molecules and drying the substrate to form a solid film of small molecules.

17. The method of any of claims 14–16, wherein the small molecules are characterized by having a vapor pressure of less than about 76 mTorr at room temperature.

18. The method of any of claims 14–17, wherein the small molecules are solid at room temperature and atmospheric pressure.

19. The method of any of claims 14–18, wherein the small molecules have a vapor pressure of at least 10 Torr and no melting point at temperature less than about 400°C.

20. The method of claim 14, wherein the small molecules are fused aromatic rings.

21. The method of claim 20, wherein the small molecules are anthracene or naphthalene.

22. The method of any of claims 14-21, wherein at least one of the small molecules comprises a compound comprising one of formulas (**I**), (**II**), (**III**), (**IV**), (**V**), (**VI**), and (**VII**).

23. A processing tool comprising:

one or more semiconductor substrate processing chambers connected under vacuum;

a controller comprising instructions for forming a film comprising small molecules on a surface of a substrate to protect the surface; and

exposing the substrate to a stimulus to induce sublimation of the small molecules.