We Claim:

1. A method of forming a planarizing layer, said method comprising:

forming an initial layer of a planarizing composition on a substrate surface, said substrate surface comprising openings formed therein, said planarizing composition comprising a compound dispersed or dissolved in a solvent system, said compound comprising protective groups and said initial layer having an initial positive bias; and

heating said layer, during which said protective groups begin to be removed from said compound and said compound crosslinks to form a final planarizing layer, said final planarizing layer having a final bias that is less than said initial bias and less than about 30 nm.

2. The method of claim 1, wherein said compound is selected from the group consisting of polymers and small molecules.

3. The method of claim 2, wherein said compound is a polymer comprising recurring monomers (I) that comprise said protective groups.

4. The method of claim 1, wherein said composition has an initial surface tension, prior to said heating, and wherein said surface tension changes during said heating so as to create a surface tension gradient, said surface tension gradient causing said composition to flow toward, or toward and onto, said openings.

5. The method of claim 1, wherein said compound has an initial polarity prior to said heating, and during said heating, said compound develops a second polarity that is more polar than said initial polarity.

6. The method of claim 1, wherein no additional or separate coating or heating is carried out to form said final planarizing layer, or to form additional planarizing layers.

7. The method of claim 1, wherein at least about 50% of said protective groups are removed after about 30 seconds of heating at a temperature of from about 120°C to about 260°C.

8. The method of claim 1, wherein said crosslinking does not commence until at least about 5 seconds after said protective group removal commences.

9. The method of claim 7, wherein said crosslinking does not commence until at least about 5 seconds after said protective group removal commences.

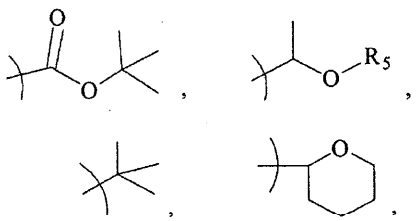
10. The method of claim 1, wherein said compound comprises a hydroxy group that has been protected by said protective group.

11. The method of claim 10, wherein said compound is a polymer comprising recurring monomers (I) that comprise a hydroxy group that has been protected by said protective group.

12. The method of claim 10, wherein said protective groups being removed during said heating generates deprotected hydroxy groups.

13. The method of claim 12, wherein said deprotected hydroxy groups are crosslinked during said heating.

14. The method of claim 1, wherein said protective groups are selected from the group consisting of



and combinations of the foregoing, where R_5 is selected from the group consisting of alkyls.

15. The method of claim 3, said polymer further comprising recurring monomers (II).

16. The method of claim 3, said polymer further comprising recurring monomers (III), wherein said recurring monomers (III) comprise functional groups that can crosslink with recurring monomers (I) after said protective groups are removed.

17. The method of claim 16, wherein said recurring monomers (I) comprise respective hydroxy groups that have been protected by said protective groups, said protective groups being removed during said heating to generate deprotected hydroxy groups that crosslink with said recurring monomers (III) during said heating.

18. The method of claim 1, wherein said composition further comprises a crosslinking agent.

19. The method of claim 18, wherein said compound comprises respective hydroxy groups that have been protected by said protective groups, said protective groups being removed during said heating to generate deprotected hydroxy groups that crosslink with said crosslinking agent during said heating.

20. The method of claim 3, wherein said polymer further comprises recurring monomers (II) and (III).

21. The method of claim 3, wherein said polymer further comprises recurring monomers (II) and said composition further comprises a crosslinking agent.

22. A planarized structure comprising:

a substrate having a surface comprising openings formed therein; and

a planarizing layer adjacent said substrate surface and uniformly deposited in said openings, said planarizing layer comprising crosslinked polymers comprising recurring monomers (I), said polymers being crosslinked through respective hydroxy groups on said recurring monomers (I), said planarizing layer having a bias of less than about 30 nm and having an average thickness of less than about 150 nm.

23. The structure of claim 22, wherein said recurring monomers (I) are selected from the group consisting of vinylphenols, phenols, cresols, vinyl alcohols, allyl alcohols, hydroxyalkyl acrylates, hydroxyalkyl methacrylates, acrylic acids, methacrylic acids, vinylbenzoic acid, and combinations of the foregoing.

24. The structure of claim 22, said polymer further comprising recurring monomers (II).

25. The structure of claim 22, said polymer further comprising recurring monomers (III), wherein said recurring monomers (III) comprise functional groups that are crosslinked with said hydroxy groups on said recurring monomers (I).

26. The structure of claim 22, wherein said planarizing layer further comprises a crosslinking agent that is crosslinked with said hydroxy groups.

27. The structure of claim 22, wherein said crosslinked polymer further comprises recurring monomers (II) and (III).

28. The structure of claim 22, wherein said polymer further comprises recurring monomers (II) and said planarizing layer further comprises a crosslinking agent crosslinked with said hydroxy groups.

29. The structure of claim 22, wherein said substrate is selected from the group consisting of silicon, aluminum, tungsten, tungsten silicide, gallium arsenide, germanium, tantalum, tantalum nitride, and silicon germanium.

30. The structure of claim 22, wherein said planarizing layer is non-photosensitive.

31. A composition comprising a polymer and a crosslinking agent dissolved or dispersed in a solvent system, said polymer comprising recurring monomers (I) and (II), wherein:

recurring monomers (I) comprise hydroxy groups protected by a protective group, said recurring monomers (I) being selected from the group consisting of protected vinylphenols, protected phenols, protected cresols, protected vinyl alcohols, protected allyl alcohols, protected hydroxyalkyl acrylates, protected hydroxyalkyl methacrylates, protected acrylic acids, protected methacrylic acids, protected vinylbenzoic acid, and combinations of the foregoing; and

recurring monomers (II) are selected from the group consisting of substituted and unsubstituted styrenes, alkylstyrenes, methyl methacrylates, alkyl acrylates, alkyl methacrylates, vinyl acetates, acrylonitriles, methacrylonitriles, 1,3-butadiene, isoprenes, 9-vinyl carbazole, and combinations of the foregoing.

32. The composition of claim 31, wherein said recurring monomer (I) is selected from the group consisting of protected vinyl phenols and protected phenols, and said recurring monomers (II) is a substituted or unsubstituted styrene.

33. The composition of claim 31, wherein said crosslinking agent comprises an epoxy group.

34. A method of forming a planarizing layer, said method comprising:

forming an initial layer of a planarizing composition on a substrate surface, said substrate surface comprising openings formed therein, said planarizing composition comprising a polymer dispersed or dissolved in a solvent system, said polymer comprising recurring monomers (I) comprising protective groups and said initial layer having an initial bias; and

heating said layer, during which said protective groups begin to be removed from said recurring monomers (I) and a final planarizing layer having a final bias is formed, said final bias being less than said initial bias and less than about 30 nm.

35. The method of claim 34, wherein said composition has an initial surface tension, prior to said heating, and wherein said surface tension changes during said heating so as to create a surface tension gradient, said surface tension gradient causing said composition to flow toward, or toward and onto, said openings.

36. The method of claim 34, wherein said recurring monomers (I) have an initial polarity prior to said heating, and during said heating, said recurring monomers (I) develop a second polarity that is more polar than said initial polarity.

37. The method of claim 34, wherein no additional or separate coating or heating is carried out to form said final planarizing layer, or to form additional planarizing layers.

38. The method of claim 34, wherein at least about 50% of said protective groups are removed after about 30 seconds of heating at a temperature of from about 120°C to about 260°C.

39. The method of claim 34, wherein said crosslinking does not commence until at least about 5 seconds after said protective group removal commences.

40. The method of claim 34, wherein said recurring monomers (I) comprise a hydroxy group that has been protected by said protective group.

41. The method of claim 40, wherein said protective groups being removed during said heating generates deprotected hydroxy groups.

42. The method of claim 41, wherein said deprotected hydroxy groups are crosslinked during said heating.

43. The method of claim 34, said polymer further comprising recurring monomers (II).

44. The method of claim 34, said polymer further comprising recurring monomers (III), wherein said recurring monomers (III) comprise functional groups that can crosslink with recurring monomers (I) after said protective groups are removed.

45. The method of claim 44, wherein said recurring monomers (I) comprise respective hydroxy groups that have been protected by said protective groups, said protective groups being removed during said heating to generate deprotected hydroxy groups that crosslink with said recurring monomers (III) during said heating.

46. The method of claim 34, wherein said composition further comprises a crosslinking agent.