CLAIMS

1. A method of fabricating an optical device comprising one or more material layers sandwiched between a first and a second conducting layer, the method comprising:

(i) receiving a substrate comprising the first conducting layer over its work surface;

(ii) removing the first conducting layer from a first area at the periphery of the substrate, the first area having a first width along the perimeter of the substrate and extending between 10% and 90% of the perimeter of the substrate;

(iii) depositing said one or more material layers of the optical device and the second conducting layer such that they cover the first conducting layer and extend beyond the first conducting layer and into the first area at the periphery;

(iv) removing material down to the substrate or to a diffusion barrier, if present, from a second area at the periphery of the substrate, the second area within the first area, the removal along a second width, narrower than the first width, and along substantially the entire perimeter of the substrate;

(v) fabricating an exposed portion of the first conducting layer by removing the second conducting layer and the one or more material layers of the optical device thereunder, thereby revealing the exposed portion of the first conducting layer; and

(vi) applying a first bus bar to the second conducting layer on a portion that does not cover the first conducting layer and applying a second bus bar to the exposed portion of the first conducting layer,

wherein at least one of the first and second conducting layers is transparent.

2. The method of claim 1, wherein (ii) comprises removing the first conducting layer in the first area at the periphery of the substrate, wherein the length of the first area is along 50% to 75% of the perimeter of the substrate.

3. The method of claim 2, wherein the exposed portion of the first conducting layer is fabricated by removing the one or more material layers at the periphery of the optical device proximate the portion of the perimeter of the substrate where the first conducting layer was not removed in (ii).

4. The method of claim 3, further comprising fabricating at least one first scribe line to isolate a portion of the optical device along sides orthogonal to sides with the first and second bus bars.

5. The method of claim 3, further comprising fabricating a second scribe line to isolate a portion of the optical device between the second bus bar and an active region of the optical device.

6. The method of claim 3, further comprising:
fabricating at least one first scribe line to isolate a portion of the optical device along sides orthogonal to sides with the first and second bus bars; and
fabricating a second scribe line to isolate a portion of the optical device between the second bus bar and an active region of the optical device.

7. The method of claim 3, wherein the depth of removal sufficient to remove at least the first conducting layer in (iv) is sufficient to remove the diffusion barrier between the substrate and the first conducting layer.

8. The method of claim7, wherein the optical device is an all solid-state and inorganic electrochromic device.

9. The method of claim8, wherein the substrate is float glass and the first conducting layer comprises fluorinated tin oxide.

10. The method of claim 7, wherein (iii) is performed in an all vacuum integrated deposition apparatus.

11. The method of claim10, wherein both the first and second conducting layers are transparent.

12. The method of claim 11, wherein the substrate is transparent.

13. The method of claim 12, further comprising depositing a vapour barrier layer on the second conducting layer prior to (iv).

14. The method of claim 7, wherein the substrate is rectangular, wherein (ii) comprises removing the first width of the first conducting layer in the first area at the periphery of the substrate, wherein the length of the first area is along three sides about the perimeter of the substrate.

15. The method of claim 14, wherein said at least one exposed portion of the first conducting layer is fabricated along the length of one side of the optical device.

16. The method of claim 15, wherein said exposed portion of the first conducting layer is fabricated along the length of the optical device proximate the side of the substrate where the first conducting layer was not removed in (ii).

17. The method of claim16, wherein the first bus bar is applied to the second conducting layer proximate the side of the optical device opposite the exposed portion of the first conducting layer.

18. The method of claim14, wherein the optical device is an all solid-state and organic electrochromic device.

19. The method of claim 18, wherein the substrate is float glass, tempered or untempered, and the first conducting layer comprises fluorinated tin oxide.

20. The method of claim 19, wherein (iii) is performed in an all vacuum integrated deposition apparatus.

21. The method of claim 20, further comprising depositing a vapor barrier layer on the second conducting layer prior to (iv).

22. The method of claim 7, wherein (ii) comprises removing the first conducting layer from the first area at the periphery of the substrate, wherein the length of the first area is along two opposing sides at the perimeter of the substrate.

23. The method of claim 22, wherein the exposed portion of the first conducting layer comprises a pair of exposed portions fabricated along the lengths of opposing sides of the optical device from which the first conducting layer was not removed in (ii).

24. The method of claim 23, wherein (vi) comprises applying a bus bar to each of said pair of exposed portions of the first conducting layer and applying a pair of first bus bars, each of said pair of first bus bars on opposing lengths of the second conducting layer and over the first where the first conducting layer was removed in (ii).

25. The method of claim 24, wherein (iii) is performed in an all vacuum integrated deposition apparatus.

26. The method of claim 25, further comprising depositing a vapor barrier layer on the second conducting layer prior to (iv).

27. The method of claim 22, further comprising fabricating an IGU from the electrochromic device.

28. The method of claim 27, wherein any remaining exposed areas of the first conducting layer are configured within the primary seal of the IGU.

29. The method of claim 28, wherein all bus bars are also configured within the primary seal of the IGU.

30. The method of claim 28, further including laminating the IGU with a flexible glass material.

31. The method of claim 14, wherein the substrate is a flexible glass, about 0.5 mm or less in thickness, and the first conducting layer comprises tin oxide, optionally with indium and/or fluoride.

32. An optical device comprising:

(i) a first conductor layer disposed over an area of a substrate, the area being less than that of the substrate, the first conductor layer surrounded by a first perimeter area at the periphery of the substrate which is substantially free of the first conductor layer;

(ii) one or more material layers comprising at least one optically switchable material, said one or more material layers configured within the perimeter area of the substrate and co-extensive with the first conductor layer but for an exposed area of the first conductor layer, the exposed area of the first conductor layer free of said one or more material layers;

(iii) a second conductor layer on said one or more material layers, said second conductor layer being transparent and being co-extensive with the one or more material layers, wherein the one or more material layers and the second conductor layer overhang the first conductor layer into the first perimeter area but for the exposed area of the first conductor and but for a second perimeter area at the periphery of the substrate, the second perimeter area within the first perimeter area, the second perimeter area substantially free of material down to the substrate or to a diffusion barrier, if present;

(iv) a first bus bar on the second conducting layer on a portion that does not cover the first conducting layer; and

(v) a second bus bar on the exposed portion of the first conducting layer.

33. The optical device of claim 32, further comprising a vapor barrier layer coextensive with the second conductor layer.

34. The optical device of claim 32, further comprising an ion diffusion barrier between the substrate and the first conductor layer.

35. The optical device of claim 34, wherein the perimeter area of the substrate includes the ion diffusion barrier.

36. The optical device of claim 32, wherein said at least one optically switchable material is an electrochromic material.

37. The optical device of claim 36, wherein the substrate and the first conductor layer are also transparent.

38. The optical device of claim 37, wherein the first bus bar is disposed proximate the perimeter area and on an opposite side of the substrate from the side with the second bus bar.

39. The optical device of claim 38, wherein the first and second conductor layers and the one or more material layers are all solid-state and inorganic.

40. The optical device of claim 38, wherein the substrate is float glass, tempered or untempered, and the first conductor layer comprises fluorinated tin oxide.

41. The optical device of claim 39, wherein the substrate is registered with a second substrate in an IGU.

42. The optical device of claim 40, wherein any exposed areas of the first conductor layer are configured within the primary seal of the IGU.

43. The optical device of claim 41, wherein all bus bars are also configured to be within the primary seal of the IGU.

44. The optical device of claim 42, wherein the area of the second conductor layer that is not over the first conductor layer is also configured within the primary seal of the IGU.

45. The optical device of claim 43, the optical device being rectangular.

46. The optical device of any one of claims 32 - 45, which does not comprise a laser isolation scribe.

47. The optical device of any one of claims 32 - 45, which does not comprise an inactive portion of the optical device.

48. The optical device of any one of claims 32 - 45, wherein the substrate is a flexible glass.