WHAT IS CLAIMED IS:

1. An array of integrated analytical devices, each device comprising:

a nanoscale emission volume;

an excitation source optically coupled to the nanoscale emission volume;

a detector layer optically coupled to the nanoscale emission volume;

an upper light-directing element disposed between the nanoscale emission volume and the detector layer; and

a lower light-directing element disposed between the upper light-directing element and the detector layer;

wherein an optical signal is emitted from the nanoscale emission volume; and

wherein the upper light-directing element and the lower light-directing element direct the optical signal from the nanoscale emission volume to a sensing region in the detector layer.

2. The array of claim 1, wherein each device in the array has a maximum lateral dimension of no more than about 3.0 µm.

3. The array of claim 1, wherein each device in the array has a maximum vertical dimension of no more than about 25 µm.

4. The array of claim 1, wherein there is a distance between the nanoscale emission volume and the upper light-directing element that is no more than about 5 µm.

5. The array of claim 1, wherein there is a distance between the lower light-directing element and the sensing region that is no more than about 5 µm.

6. The array of claim 1, wherein the lower light-directing element comprises a truncated cone shape, a cylindrical pillar shape, an oval pillar shape, a square pillar shape, a rectangular pillar shape, or a combination of these shapes.

7. The array of claim 6, wherein the lower light-directing element comprises a truncated cone shape.

8. The array of claim 7, wherein the lower light-directing element comprises a plurality of truncated cone shapes.

9. The array of claim 6, wherein the lower light-directing element comprises a cylindrical pillar shape.

10. The array of claim 6, wherein the lower light-directing element comprises a truncated cone shape and a cylindrical pillar shape.

11. The array of claim 1, wherein the lower light-directing element comprises a high-index core material embedded in a low-index cladding material.

12. The array of claim 1, wherein the optical signal is generated by a plurality of optical emitters within the nanoscale emission volume.

13. The array of claim 12, wherein each optical emitter in the plurality of optical emitters has a different amplitude of emission.

14. The array of claim 1, wherein the detector layer of each device comprises a single sensing region.

15. The array of claim 1, wherein the upper light-directing element comprises a diffractive optical element.

16. The array of claim 15, wherein the diffractive optical element is a Fresnel lens.

17. The array of claim 1, wherein the upper light-directing element comprises amorphous silicon.

18. The array of claim 1, further comprising a laser-rejection filter.

19. The array of claim 18, wherein the laser-rejection filter comprises a thin-film interference filter.

20. The array of claim 18, wherein the laser-rejection filter is configured to decrease transmission of an excitation signal from the excitation source.

21. The array of claim 18, wherein the laser-rejection filter is configured to allow transmission of the optical signal emitted from the nanoscale emission volume.

22. The array of claim 18, wherein the laser-rejection filter is disposed between the lower light-directing element and the detector layer.

23. The array of claim 18, wherein the laser-rejection filter is disposed between the upper light-directing element and the lower light-directing element.

24. The array of claim 18, wherein the laser-rejection filter comprises a selectively absorptive material.

25. The array of claim 24, wherein the selectively absorptive material is a dielectric material.

26. The array of claim 25, wherein the dielectric material is amorphous silicon or silicon nitride.

27. The array of claim 18, wherein the laser-rejection filter and the lower light-directing element comprise a selectively absorptive material.

28. The array of any one of claims 1-27, further comprising an analyte disposed within the nanoscale emission volume.

29. The array of claim 28, wherein the analyte comprises a biological sample.

30. The array of claim 29, wherein the biological sample comprises a nucleic acid.

31. The array of claim 30, wherein the biological sample comprises a polymerase enzyme.

32. The array of any one of claims 1-27, wherein the array comprises at least 1,000 nanoscale emission volumes.