WHAT IS CLAIMED IS:

1. A device comprising:

a flow cell; and

a detection device having the flow cell coupled thereto, the flow cell and the detection device forming a flow channel that is configured to have biological or chemical substances therein that generate light emissions in response to an excitation light, the detection device including:

a device base having a sensor array of light sensors and a guide array of light guides, the device base having an outer surface, the light guides configured to receive the excitation light and the light emissions from the flow channel, each of the light guides extending into the device base along a central longitudinal axis from an input region of the light guide toward a corresponding light sensor of the sensor array, the light guides including a filter material that is configured to filter the excitation light and permit the light emissions to propagate therethrough toward the corresponding light sensors, the device base including device circuitry that is electrically coupled to the light sensors and configured to transmit data signals based on photons detected by the light sensors;

a passivation layer that extends over the outer surface of the device base and forms an array of reaction recesses above the light guides;

wherein the device base includes peripheral crosstalk shields located therein that at least partially surround corresponding light guides of the guide array, the crosstalk shields at least partially surrounding the corresponding light guides about the respective longitudinal axis to reduce optical crosstalk between adjacent light sensors.

2. The device of claim 1, wherein the crosstalk shields surround the input regions of the corresponding light guides.

3. The device of claim 1, wherein the crosstalk shields include crosstalk rings that circumferentially surround the corresponding light guide.

4. The device of claim 1, wherein the device base includes a complementary-metal-oxide semiconductor (CMOS) and the crosstalk shields include metallic elements located within dielectric layers of the device base, the crosstalk shields being electrically separate from the device circuitry.

5. The device of claim 1, wherein the reaction recesses have corresponding base surfaces, the base surfaces being located above the light guide at a depth into the device base.

6. The device of claim 1, further comprising a shield layer extending between the passivation layer and the device base, the shield layer having apertures that are positioned relative to the input regions of corresponding light guides of the guide array, the apertures permitting the light emissions to propagate therethrough into the input regions, the shield layer extending between adjacent apertures and configured to block the excitation light and the light emissions incident on the shield layer between the adjacent apertures.

7. The device of claim 6, wherein the input regions of the light guides are located within the corresponding apertures of the shield layer or are located a depth into the device base.

8. The device of claim 6, wherein the passivation layer extends along the shield layer such that the shield layer is between the passivation layer and the device base, the passivation layer extending across the apertures.

9. The device of claim 8, wherein the passivation layer includes tantalum pentoxide (Ta_2O_5).

10. The device of claim 8, wherein the passivation layer includes multiple sub-layers in which at least one of the sub-layers includes tantalum pentoxide (Ta_2O_5).

11. The device of claim 10, wherein the sub-layers includes two tantalum pentoxide layers with a low-temperature film therebetween.

12. The device of claim 10, wherein the sub-layers include two plasma vapor deposition (PVD) tantalum pentoxide layers with a plasma enhanced chemical vapor deposition (PECVD) silicon nitride film therebetween.

13. The device of claim 6, wherein the crosstalk shields abut or are immediately adjacent to the shield layer.

14. The device of claim 6, wherein the shield layer is in contact with the passivation layer, but is not in contact with the filter material of the light guides.

15. The device of claim 1, wherein the crosstalk shields are first crosstalk shields, the device base including second crosstalk shields, wherein each of the light guides of the guide array is at least partially surrounded by corresponding first and second crosstalk shields.

16. The device of claim 15, wherein the first and second crosstalk shields are spaced apart from each other along the corresponding longitudinal axis.

17. The device of claim 15, wherein the first and second crosstalk shields have different dimensions.