Claims

1. A~~n~~ high resolution micro light emitting diode array comprising a plurality of light emitting pixels, wherein at least two of the plurality of light emitting pixels each comprise a light emitting diode device and are separated by a distance of less than or equal to 1 μm by conjugated organic semiconductors dispersed in a medium, wherein the conjugated organic semiconductors ~~are configured to~~ absorb light of a predefined wavelength~~,~~ corresponding to the primary peak wavelength of light emitted by ~~thereby to reduce optical crosstalk across the medium between the~~ at least one~~two~~ of the ~~plurality of~~ light emitting pixels.

~~2. The array according to claim 1, wherein the at least two of the plurality of light emitting pixels are separated by a distance of less than or equal to 2 μm and preferably less than or equal to 1 μm.~~

~~3. The array according to any preceding claim, wherein the at least two of the plurality of light emitting pixels each comprise a micro light emitting diode device.~~

~~4.~~2. The array according to claim 1~~3~~, wherein at least one of the plurality of light emitting pixels comprise a light conversion layer arranged to receive input light with a primary peak wavelength and convert the input light to output light with a different primary peak wavelength.

~~5.~~3. The array according to claim 2~~4~~, wherein the light conversion layer comprises organic semiconductors that~~configured to~~ convert the input light to output light.

~~6.~~4. The array according to any one of the preceding claims, wherein the conjugated organic semiconductors comprise~~are conjugated organic semiconductors comprising~~ a plurality of conjugated structures, ~~preferably wherein the organic semiconductors are organic semiconductors, more preferably~~ wherein the plurality of conjugated structures comprise a core and an arm.

~~7.~~5. The array according to claim ~~4~~6 wherein at least two of the plurality of conjugated structures have a different functional property.

~~8.~~6. The array according to any one of the preceding claims, comprising further organic semiconductors that~~configured to~~ absorb light of a further predefined wavelength different to the predefined wavelength.

~~9.~~7. The array according to any one of the preceding claims, wherein the organic semiconductors ~~are configured to~~ absorb light of a predefined range of wavelengths comprising the predefined wavelength.

~~10.~~8. The array according to any one of the preceding claims, wherein the medium is at least one of a resin and a polymer medium.

~~11.~~9. The array according to any one of the preceding claims, wherein the array is a high resolution micro LED array with a pixel pitch ~~less than 10 μm, preferably~~ less than 4 μm.

~~12.~~10. The array according to any one of the preceding claims, wherein the plurality of light emitting pixels each have a light emitting surface that is less than or equal to ~~100 μm^2, preferably less than~~ 16 μm^2.

~~13.~~11. A method of forming a~~n~~ high resolution micro light emitting diode array comprising a plurality of light emitting pixels, wherein at least two of the plurality of light emitting pixels each comprise a micro light emitting diode device and are separated by a distance of less than or equal to 1 μm by conjugated organic semiconductors dispersed in a medium, wherein the conjugated organic semiconductors ~~are configured to~~ absorb light at~~of~~ a predefined wavelength~~, thereby to reduce optical crosstalk across the medium between the at least two of the plurality of light emitting pixels~~ corresponding to the primary peak wavelength of light emitted by at least one of the plurality of micro light emitting diode devices.

~~14. The method according to claim 13, wherein the at least two of the plurality of light emitting pixels are separated by a distance of less than or equal to 2 μm and preferably less than or equal to 1 μm.~~

~~15. The method according to of claims 13 and 14, wherein the at least two of the plurality of light emitting pixels each comprise a micro light emitting diode device.~~

~~16.~~12. The method according to any ~~of~~ claim 11~~13 to 15~~, wherein at least one of the plurality of light emitting pixels comprise a light conversion layer arranged to receive input light with a primary peak wavelength and convert the input light to output light with a different primary peak wavelength.

~~17.~~13. The method according to claim 12~~16~~, wherein the light conversion layer comprises organic semiconductors that~~configured to~~ convert the input light to output light.

~~18.~~14. The method according to any one of claims 11~~13~~ to 13~~17~~, wherein the ~~organic semiconductors are~~ conjugated organic semiconductors comprise~~ing~~ a plurality of conjugated structures, ~~preferably wherein the organic semiconductors are organic semiconductors, more preferably~~ wherein the plurality of conjugated structures comprise a core and an arm.

~~19.~~15. The method according to claim 14~~18~~, wherein at least two of the plurality of conjugated structures have a different functional property.

~~20.~~16. The method according to any one of claims 11~~13~~ to 15~~19~~, wherein the array comprises further organic semiconductors dispersed in the medium, wherein the further organic semiconductors ~~are configured to~~ absorb light of a further predefined wavelength different to the predefined wavelength.

~~21.~~17. The method according to any one of claims 11~~13~~ to 16~~20~~, wherein the organic semiconductors ~~are configured to~~ absorb light of a predefined range of wavelengths comprising the predefined wavelength.

~~22.~~18. The method according to any one of claims 11~~13~~ to 17~~21~~, wherein the medium is at least one of a resin and a polymer medium.

~~23.~~19. The method according to any one of claims 11~~13~~ to 18~~22~~, wherein the array is a high resolution micro LED array with a pixel pitch ~~less than 10 μm, preferably~~ less than 4 μm.

~~24.~~20. The method according to any one of claims 11~~13~~ to 19~~23~~, wherein the plurality of light emitting pixels each have a light emitting surface that is less than or equal to ~~100 μm², preferably less than~~ 16 μm^2.