Fabrication of Highly Luminescent QD/Silicone Film with uniform dispersion by Sol-Gel Modification of Silicone Resin

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High photoluminescence efficiency of quantum dot (QD)/polymer composite film is necessary to QD LED. We investigated the change in quantum yield(QY) of QD in sol-gel hybrid silicone resin with controlling dispersion. We incorporate QD within high refractive index silicone resin. By sol gel modification of silicone resin with silane precursor, thiol functionalized silicone resin can be synthesized, which can have high affinity with QDs. We think that QDs in thiol functionalized-silicone resin has higher QY compared to QDs in non-modified silicone resin because of degree of dispersion. Dispersion and QY is measured by confocal microscopy, TEM and integrating sphere. We fabricate white light emitting diodes by stacking red and green emitting films or blending red and green emitting film.

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