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(54) Title: ORGANIC PHOSPHOR-FUNCTIONALIZED NANOPARTICLES AND COMPOSITIONS COMPRISING THE SAME

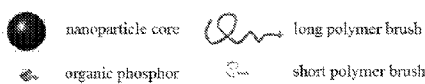
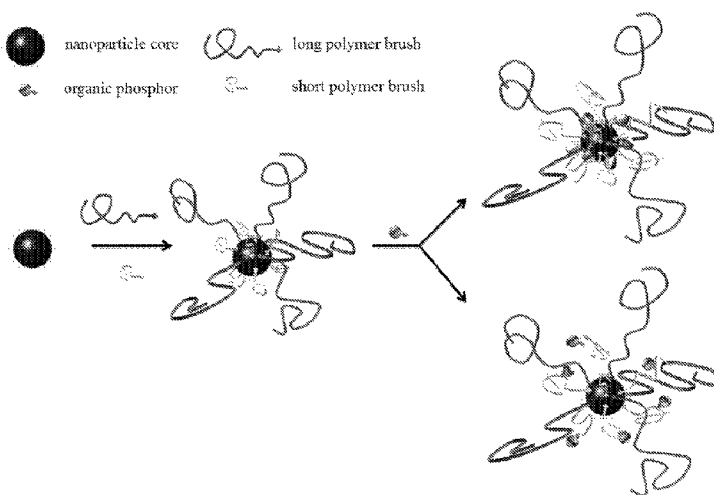

(57) Abstract: Provided is a phosphor-functionalized nanoparticle that includes an inorganic nanoparticle core; surface polymer brushes that include a plurality of long-chain polymers bonded to the surface of the inorganic nanoparticle core, said long-chain polymers each having molecular weight greater than 500, and a plurality of short-chain polymers bonded to the surface of the inorganic nanoparticle core, said short-chain polymers each having molecular weight less than 0.5 times the average molecular weight of the long-chain polymers; and one or more organic phosphors bonded to at least one of the inorganic nanoparticle core and one or more of the plurality of short-chain polymers. Graft density of the short-chain polymers on the surface of the inorganic nanoparticle core (σ_{sc}) is greater than graft density of the long-chain polymers on the surface of the inorganic nanoparticle core (σ_{lc}). Also provided are polymer matrices, LED's, optical systems, lighting devices, and fixtures that include the inventive nanoparticle.

FIG. 1



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, —
KM, ML, MR, NE, SN, TD, TG).

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