Inorganic upconverting “Nano-lamps”

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Lanthanide-doped Upconverting nanoparticles (UCNP) show the interesting property of converting low energy Near-Infrared (NIR) photons into high energy visible light with narrow emission bands. Virtually non-toxic, non-blinking, non photo-bleachable, extremely stable, and moreover operated within a spectral window compatible with biological applications, they are now considered as a promising surrogate for classical quantum dots[1]. Besides being used in simple labeling strategies (imaging, tracking), local photochemistry at the vicinity of these nanoparticles is becoming an important application field, with focus on photocatalysis or molecular switches for example. The first studies on UCNP acting as local light sources described the qualitative use of these “nano-lamps”[2].

Scheme 1. Upconverting nanoparticle

References