

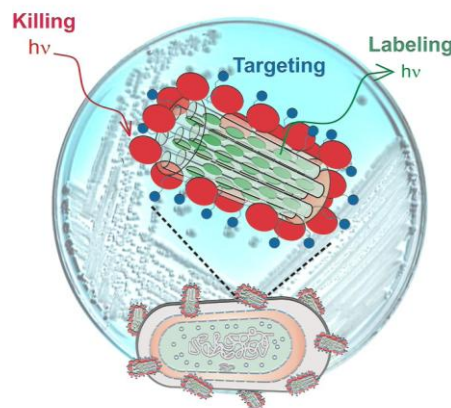
Nanocontainers: properties, manipulation and bio-medical applications

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The creation of molecular (nano)containers: crystalline or amorphous, rigid or soft is a very fascinating field at the cross point of different disciplines. Our effort, in this talk, focuses on the synthesis and use of crystalline materials, zeolites L, which are transparent, stiff, nanocontainers. They are made of hundreds of parallel aligned unidimensional channels, which can be filled with molecular dyes or other responsive molecules. The selective and spatial resolved functionalization of these nanocontainers can lead to multifunctional systems [1]. Furthermore the selective functionalization of the channel entrances, lead to the self-assembling of the zeolites, and the assembly process can be extended to living organism such as bacteria [2]. The use of appropriate light responsive components in combination with the smallest zeolites (30 nm) has been very successfully applied for the labeling targeting and killing of antibiotic resistant bacteria (see figure) [3].

Finally we have realized hierarchical supramolecular organization by optical control of nano-containers that contain highly ordered molecules. Holographic optical tweezers allow for precise, exible, and dynamic 3D position and orientation control of arbitrary shaped multiple container particles. [4].



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