

Jacqueline Bloch

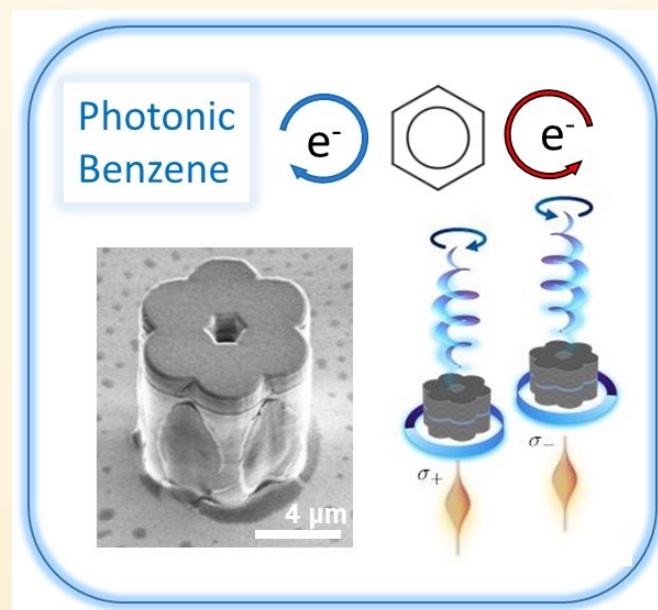
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When light sheds light on condensed matter

Fascinating physical phenomena such as electrical conduction, magnetism or superconductivity emerge in condensed matter from the subtle interplay between properties of individual elementary constituents of the material, their mutual coupling and the overall symmetry properties of the system. Interestingly if one implements the main of these ingredients in a different experimental system, it is possible to reproduce these physical phenomena. The advantage of such an analog system is that it may be easier to control, and to probe than the natural system, and can offer the possibility to go beyond what exists in nature.

In the present talk, I will explain how light trapped in arrays of coupled tiny cavities, which are realized using nanotechnology, provides a versatile analog platform to emulate condensed matter phenomena. After a general introduction to the field, I will show how light can mimic electron properties in a benzene molecule, in a monolayer of graphene and can even become superfluid.

I will show how beyond deep understanding of fundamental physical phenomena, these analog simulations enables conceiving novel photonic devices for integrated photonics.



Tuesday, 15.11.2022, at 17:15 h, HS A (Technik)