Flexible nanostructured optical materials

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In recent times, several synthetic pathways have been developed to create photonic structures of diverse composition that combine accessible porosity and optical properties of structural origin, i.e., not related to absorption. The technological potential of such porous optical materials has recently been demonstrated in various fields such as biological and chemical sensing, photovoltaics, or radiation shielding. One of their most interesting opportunities porosity brings on is that of preparing flexible optical materials that preserve the high dielectric contrast of inorganic periodic structure and the excellent mechanical properties of polymers. These materials offer the possibility to take advantage in flexible devices of improved and controlled light absorption and emission phenomena taking place in photonic materials. In this talk, an outline of this emerging field will be provided, special emphasis being put in the opportunities it offers in the fields of energy and radiation protection.

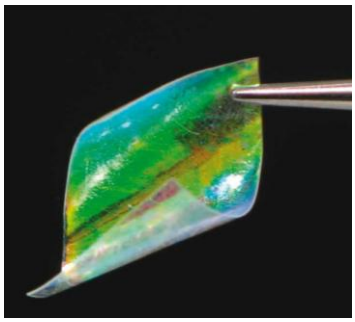

Image of a flexible Bragg mirror made by infiltrating a porous periodic multilayer with a biocompatible polymer.

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