

A three-dimensional
dispersible nanoresonator
structure for biological,
medical and environmental
applications and a method
for manufacture thereof



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Invention



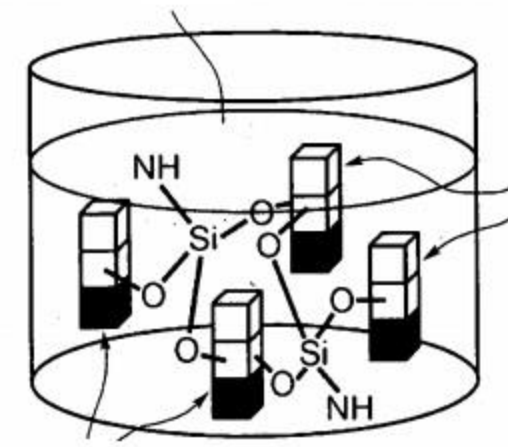
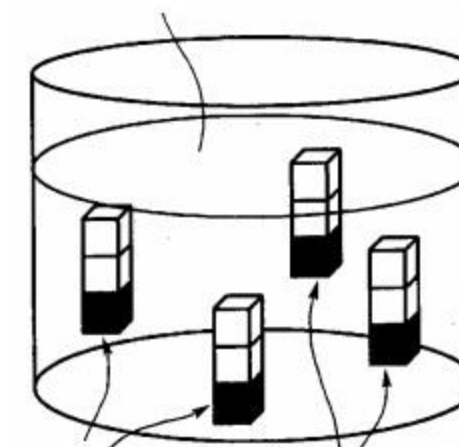
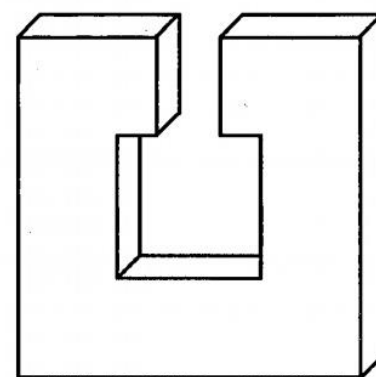
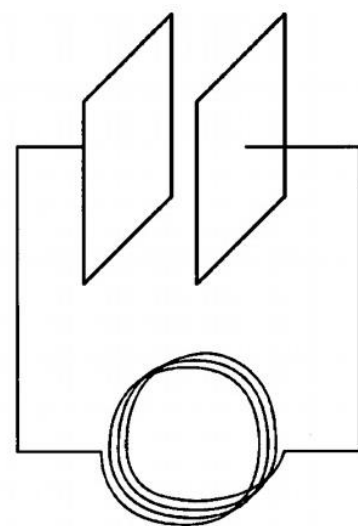
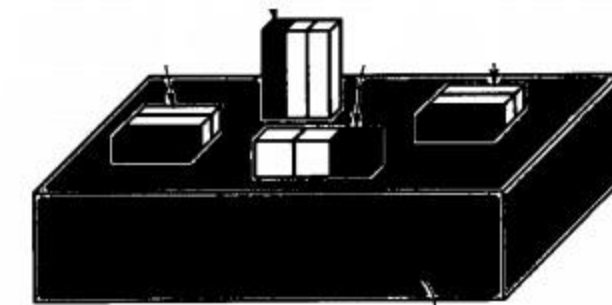
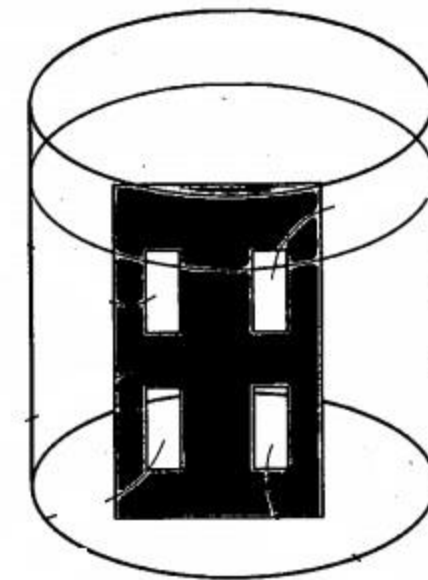
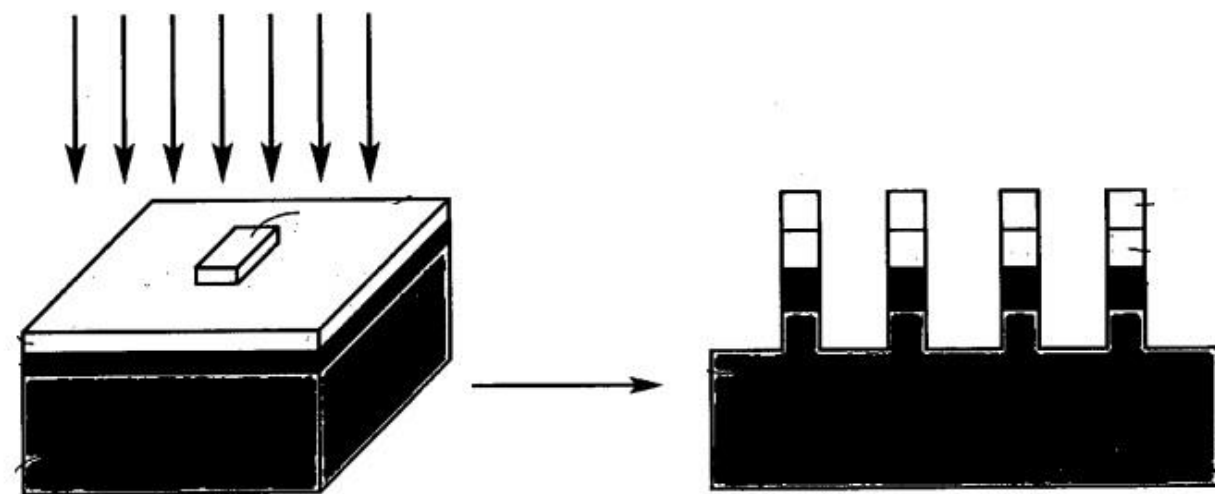
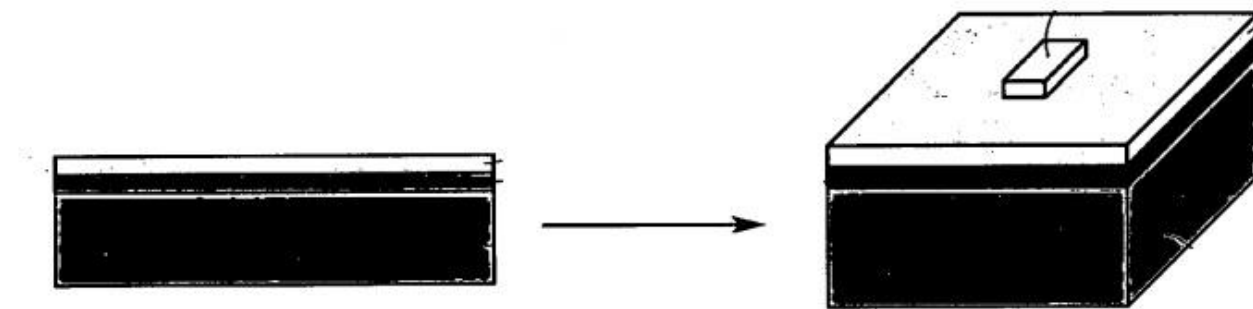
Nanoresonators, also known as nanoantennas, are resonator devices of nanometric dimensions which, when exposed to wide-spectrum exciting electromagnetic radiation, show increased absorption at a natural resonant frequency determined by the characteristics of the resonator structure and/or by the interactions with the environment in which they are immersed. This frequency is located between the THz and the near infrared wavelengths.

Traditional nanoresonators are typically used for in vitro biological analysis, but have the disadvantage that they cannot be injected into a living organism and traced in vivo, because they cannot be separated from the substrate.

The object of this invention is to provide 3-dimensional nanoresonators which are free, that is to say not fixed to any substrate and dispersible in a fluid medium, and have resonance properties tunable over a wide spectrum of wavelengths as a result of the design of the resonant structure, while being sensitive to the chemical and physical characteristics of their environment or to the presence of specific molecular species.

IIT Istituto Italiano di Tecnologia e Scuola Normale Superiore are co-owner of the patent.

Drawings
& pictures



Industrial applications



Application: biological analysis.

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Possible developments



Our research group is interested in obtaining industrial collaborations aimed at increasing the technological maturity of the present invention or industrial partners interested in taking the license of the technology object of this patent.

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