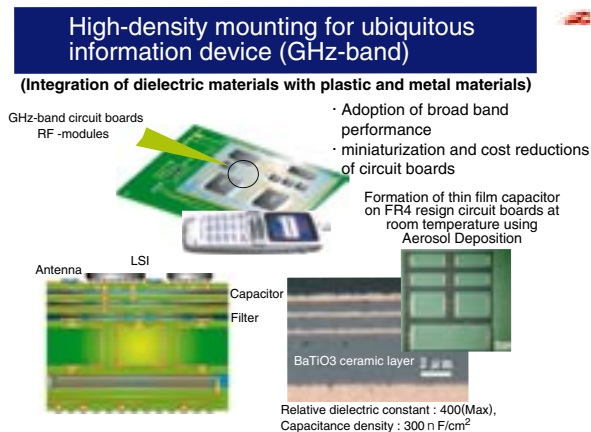


World's First Technologies Embedded Capacitors on Resin Circuit Boards

The National Institute of Advanced Industrial Science and Technology (AIST) in collaboration with Fujitsu Limited and Fujitsu Laboratories Ltd., have developed the world's first technologies that enable the formation and multi-layering at room temperature of ceramic film with dielectric constant of 400, on resin circuit boards. The new technologies, named as Aerosol Deposition, makes it possible to embed passive components such as condensers into printed circuit boards, such as FR4 resin circuit boards, thereby achieving miniaturization and cost reductions of circuit boards.



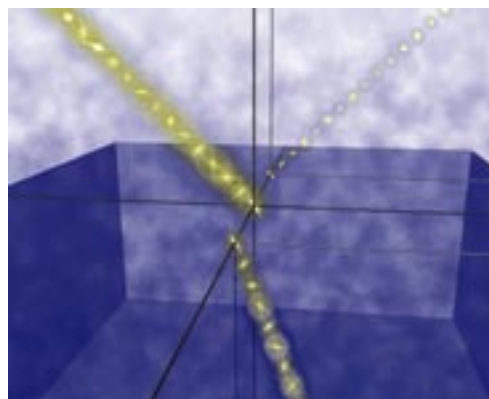
Electric passive components embedded on resin circuit boards using Aerosol Deposition

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Optical Hall Effect Fully Clarified

AIST has derived a new basic equations of geometrical optics taking into consideration the effect of polarization to the propagation of light wave packet, in collaboration with University of Tokyo. These equations predict "optical Hall effect" in which the polarization affects the trajectory of light beam and causes a shift in the direction perpendicular to change of refractive index. The effect, not predicted from the conventional geometrical optics, is closely linked with the conservation of total angular momentum of photon. The research group has proposed to amplify the effect extensively by use of photonic crystal. This study is supported by JST.



Reflection and refraction at an interface. When the incident light is circularly polarized, the mid-axes of reflected and refracted light beams pass through planes different from the trajectory of incident light.

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