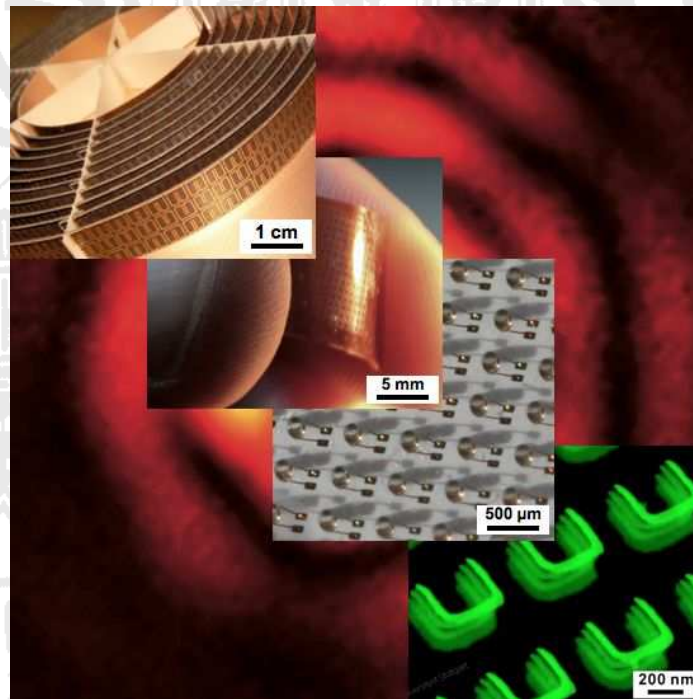


# PHYSIKALISCHES KOLLOQUIUM

AM 21. NOVEMBER 2011 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



Left to right: Metamaterials designed for microwaves, terahertz and visible light (designed at Duke University, Univ. Freiburg and Univ. Stuttgart)

## CONTROLLING AND MANIPULATING LIGHT WITH METAMATERIALS

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Conventional materials owe their optical properties, such as color and refractive index, to the resonant response of their constituent atoms and molecules to an incident electromagnetic wave. Metamaterials extend this concept replacing the molecules with man-made entities of sub-wavelength dimensions. Corresponding structure sizes range from milli- and micrometers in the case of GHz and THz radiation to a few nanometers for visible light. In this way optical material properties can be deliberately engineered through structure, size and arrangement of these entities. Fueled by the desire for optical components with novel and unusual properties, and enabled by recent advances in micro- and nanofabrication techniques research in this field is developing at an increasingly rapid pace. In this talk I will give an introduction into the concept of optical metamaterials and review recent progress in this exciting new field of research.