Terahertz wave detection based on low-dimensional electron systems

Dr Yukio Kawano
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Thursday 31st May 2012 at 2.00pm,
University of Oxford,
Martin Wood Lecture Theatre,
followed by light refreshments

In this talk, Dr Kawano gives the advantageous properties of terahertz (THz) waves - permeability through objects opaque for visible light, the important energy spectrum in the meV range, etc. – which potentially enable various applications of imaging and spectroscopy in this band. However, since the THz region is located between the electronic and photonic bands, even basic components like detector and source have not been fully established, compared to the technically mature other frequency regions. The THz wave also has the problem of low imaging resolution, which results from a much longer wavelength than that of the visible light. He will present a new type of THz sensing and imaging devices based on low-dimensional electron systems, such as carbon nanotube (CNT), graphene, and two-dimensional electron gas (2DEG) in a GaAs/AlGaAs heterostructure.

Dr Kawano was awarded the Sir Martin Wood Prize at the Millennium Science Forum which took place at the British Embassy, Tokyo, November 2011. The Millennium Science Forum was established in 1998 to promote scientific exchange between Britain and Japan and recognise the work of outstanding young Japanese researchers. The prize is named after Sir Martin Wood, Founder of Oxford Instruments.

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