复旦大学物理系物质科学报告

Physics Department Colloquium

Progress in Nano-imaging of Graphene Plasmons and Related Applications on Probing Electronic Property in Nanometric Graphene Defects and Controlling Plasmon Wavefront

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摘要：

Graphene holds great promise for ultra-compact and electronically controlled plasmonics. Recently, resonant coupling of propagating THz waves to plasmons in micro-ribbons has been demonstrated, while IR near-field microscopy has been applied to observe the coupling of graphene plasmons to phonons. In our work we use scattering-type scanning near-field optical microscopy (s-SNOM) to visualize propagating and localized infrared plasmon modes in graphene nanostructures in real space. By spectroscopic imaging we measure the graphene plasmon wavelength λ_p as a function of excitation wavelength, which confirms the theoretically predicted plasmon dispersion. We observe that the plasmon wavelength $\lambda_p=\lambda_0/40$ is remarkably reduced compared to the illumination wavelength λ_0, which can directly be attributed to the two-dimensionality

and unique conductance properties of graphene. Furthermore, we demonstrate tunability of the plasmon wavelength by gating graphene nanoribbons on a SiO_2 substrate. The possibility to tune plasmons of extreme subwavelength electronically opens up a new paradigm in optical and opto-electronic telecommunications and information processing.

Time: 2:00pm, Tuesday, 2015.11.17

Location： Physics Building, Room 221B

(Cookies and coffee are served from 1:30 pm)

About the speaker:

报告人简历

陈佳宁，男，1981 年生。现为中国科学院物理研究所特聘研究员，博士生导师。2008 年毕业于大连理工大学物理系，凝聚态物理专业，理学博士。2009 年为瑞典 Lund 大学固体物理系博后。2010-2013 受聘为西班牙科技部（CSIC,Spanish Natioanl Reserach Council）JAE Doc 研究员，在位于 San Sebastian 的材料物理中心(CFM)及纳米中心(nanoGUNE)工作。2013 年入选中组部“青年千人计划”以及中科院“百人计划”。同年 7 月回国，在中科院物理所光物理实验室工作。中国科学院 2014 年度“卢嘉锡青年人才奖”获得者。