



復旦大學

Fudan University



復旦大學物理系物質科學報告

Physics Department Colloquium

Optical properties of 2D transition metal dichalcogenides

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Abstract: The ultimate goal of making electronic devices with atomically thin layers stimulates the research in layered materials, in particular the Group VI transition metal dichalcogenides (TMDs). The atomically thin TMD crystals emerge as a family of intrinsic 2 dimensional (2D) semiconductors and The TMDs nanosheets come across a transition from indirect gap materials at the bulk form to direct band gap semiconductors at the monolayer limit. Monolayer TMDs are ideal quasi-two-dimensional semiconductors with a sizeable bandgap in the visible and near infrared range, satisfying the fundamental requirements for ultimate electronics and optoelectronics. In addition, the characteristic inversion symmetry breaking presented in monolayer TMDs leads to non-zero but contrasting but non-zero Berry curvatures and opposite orbit magnetic moments at K/K' valleys located at the six corners of the first Brillouin zone. These features provide the opportunity to manipulate electrons' additional internal degrees of freedom, namely the valley degree of freedom, making monolayer TMDs a promising candidate for the conceptual valleytronics. In this talk, I' ll introduce our progress in the optical study of 2D TMDs.

Time: 2:00pm, Tuesday, 16 Sept., 2014

Location: Physics Building, Room 221B

(Cookies and coffee will be served from 1:30 pm)