

グラファイトにおける電子格子相互作用の 高分解能電子エネルギー損失分光による直接観察

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Physical Review B

Vol. 95, 165408 (2017)

Published online: 7 April 2017

DOI: 10.1103/PhysRevB.95.165408

Direct observation of the electron-phonon coupling between empty states in graphite via high-resolution electron energy-loss spectroscopy

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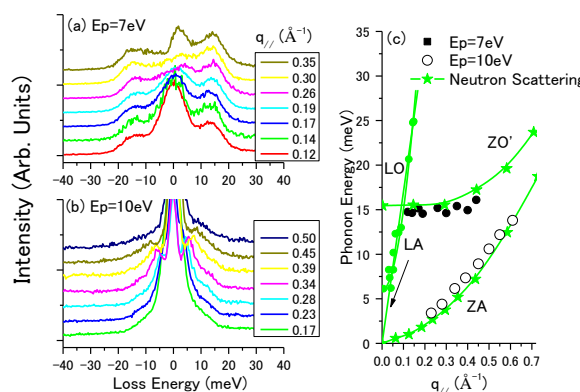


Figure 1. HREELS spectra and obtained phonon-dispersion curves of graphite detected with two primary energies. Only 3-eV change gives different modes of phonons

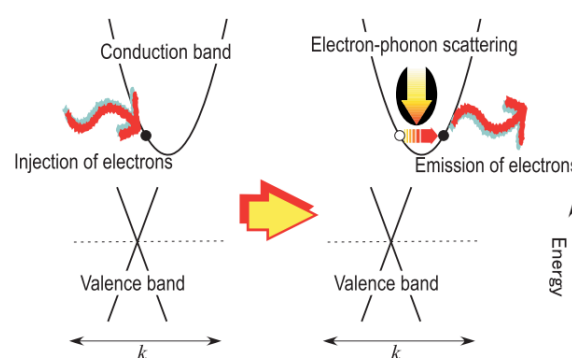


Figure 2. Schematic drawing for the newly proposed scattering mechanism. The electron is trapped at a certain point in the Brillouin zone, scattered by phonon, and ultimately detected by the analyzer.

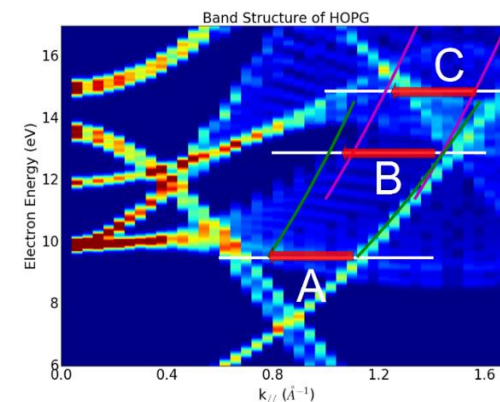


Figure 3. Comparison between the resonant condition observed in the present work (A and C) and the density of states obtained by the LDA calculation. Correspondence is reasonable.

グラファイトにおける電子格子相互作用の素過程である電子フォノン散乱過程を、高分解能電子エネルギー損失分光という実験手法を用いて、運動量やエネルギーまで分解して観察することに成功しました。

Electron-phonon scattering in graphite, which is the elemental process of the electron-phonon coupling, is probed with resolving the energies and momenta of both the electron and phonon by the use of the high resolution electron energy loss spectroscopy.