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Angle Resolved Photoelectron Spectroscopy as the method for investigation of electronic structure of graphene

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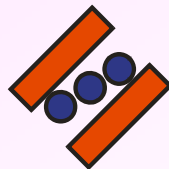
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**HELMHOLTZ
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für Materialien und Energie

Angle Resolved Photoelectron Spectroscopy (ARPES)

$$E_{bin} = h\nu - E_{kin} - \Phi$$

E_{bin} - binding energy (eV)

$h\nu$ - photon energy (eV),

E_{kin} - kinetic energy of photoelectron (eV),

Φ - work function (eV).

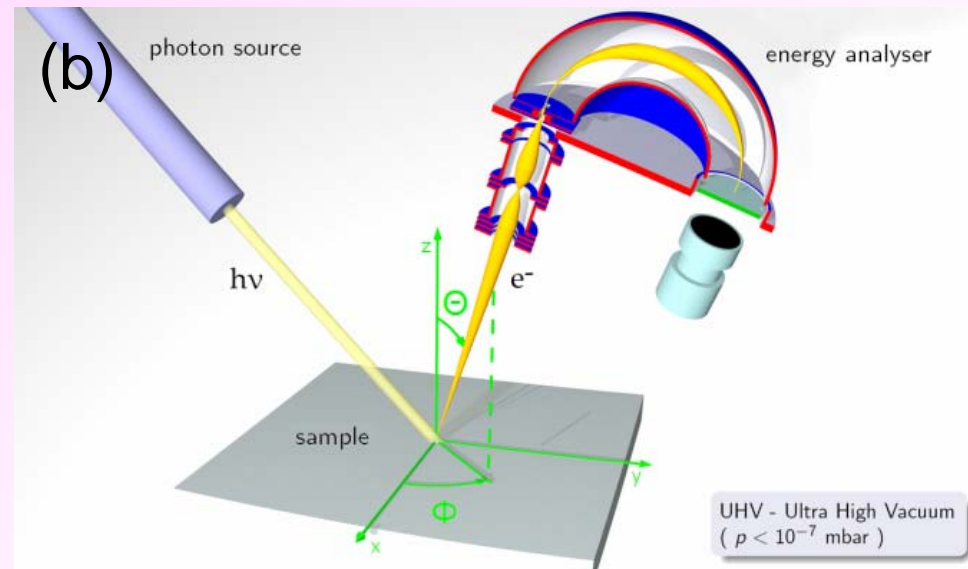
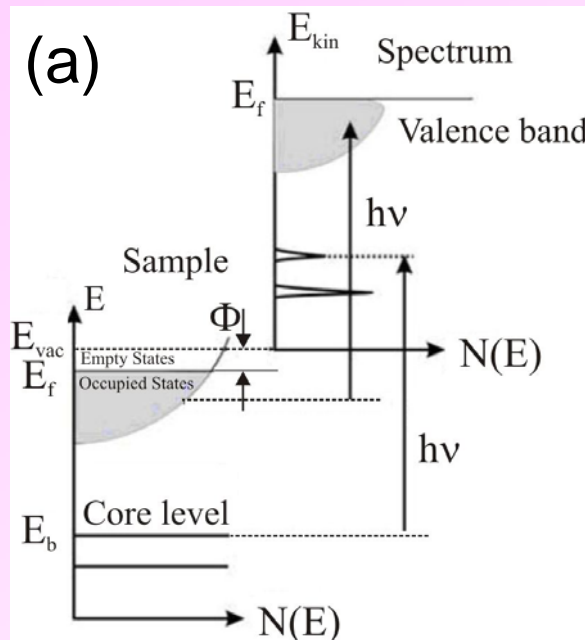


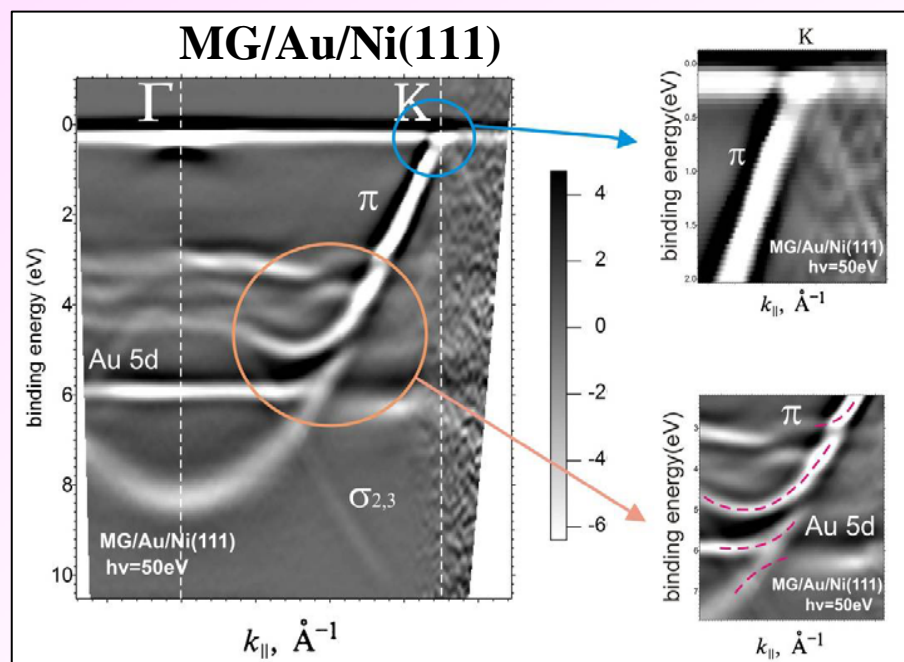
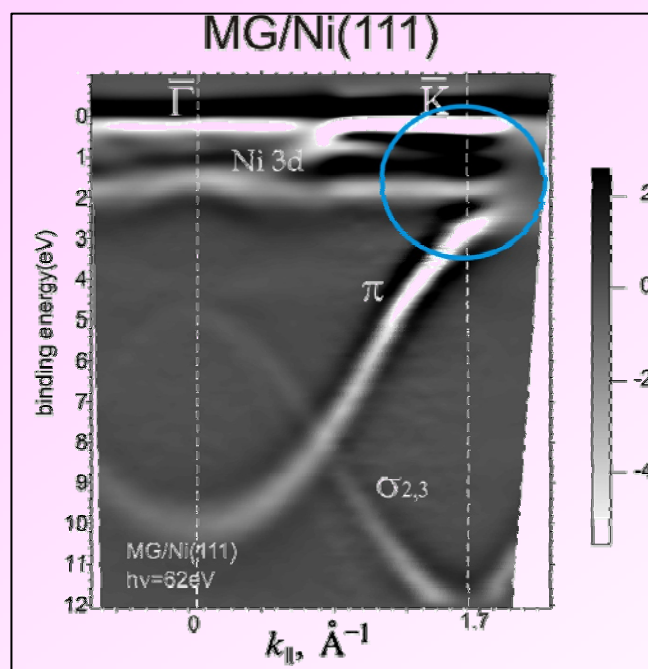
Fig. (a) energy diagram illustrating the photoexcitations with monochromatized light; (b) Scheme of photoemission experiment.

ARPES - the method for investigation of electronic structure of graphene

$$k_{\parallel} \sim 0,51\sqrt{E_{kin}} \sin\Theta$$

k_{\parallel} - component of momentum parallel to the surface
 E_{kin} – kinetic energy of photoelectron,
 Θ - polar angle of the detected electrons.

The electronic structure of graphene on top of different substrate:



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