

# Cesium induced linear dispersion of the Graphene/Ni(111) interband plasmon

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## Abstract

We present the comparative study of the graphene/Ni(111) and the graphene/Cs/Ni(111) systems by means of angle resolved electron energy loss spectroscopy (AREELS), in order to investigate modifications of the collective electronic properties caused by Cs intercalation.

In our experimental results, the  $\pi$  plasmon dispersion of epitaxial graphene on Ni(111) changes drastically as a result of Cs intercalation: we measure a square-root behavior in absence of Cesium atoms<sup>1</sup> and a linear dependence in the intercalated system. The dispersion curve of  $\pi$  plasmon shows that alkali metal atoms make graphene to be quasi-free with the recovery of the typical Dirac cones observed in free standing flakes<sup>2</sup>.

## References

- [1] A. Cupolillo, N. Ligato and L. S. Caputi, Carbon **50**, (2012) 2588.
- [2] A. H. Castro Neto, F. Guinea, N. M. R. Peres, K. S. Novoselov and A. K. Geim, Rev. Mod. Phys. **81**, (2009) 109.