

Spin Valve devices on Single and bi-layer CVD-graphene

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Abstract

Due to the low intrinsic spin-orbit, graphene is a promising material for spintronics. Long spin diffusion lengths have been experimentally reported for exfoliated [1,2,3] and epitaxial graphene [4,5]. However, the most promising technique for industrial production of graphene devices remains the Chemical Vapor Deposition (CVD) one, for which the graphene spintronics literature is not as abundant.

We report on the fabrication of lateral spin valve devices on CVD graphene transferred on SiO₂. We show the importance of an interfacial AlO_x layer for spin-injection and confront the performance of single and multi-layer graphene channels.

References

- [1] M. H. D. Guimarães, A. Veligura, P. J. Zomer, T. Maassen, I. J. Vera-Marun, N. Tombros, and B. J. van Wees, *Nano Lett.* **12**, 3512 (2012).
- [2] W. Han, K. M. McCreary, K. Pi, W. H. Wang, Y. Li, H. Wen, J. R. Chen, and R. K. Kawakami, *J. Magn. Mater.* **324**, 369 (2011).
- [3] M. Popinciuc, C. Józsa, P. J. Zomer, N. Tombros, A. Veligura, H. T. Jonkman, and B. J. van Wees, *Phys. Rev. B* **80**, 1 (2009).
- [4] B. Dlubak, M.-B. Martin, C. Deranlot, B. Served, S. Xavier, R. Mattana, M. Sprinkle, C. Berger, W. a. De Heer, F. Petroff, A. Anane, P. Seneor, and A. Fert, *Nat. Phys.* **8**, 1 (2012).
- [5] T. Maassen, J. J. van den Berg, N. Ijbema, F. Fromm, T. Seyller, R. Yakimova, and B. J. van Wees, *Nano Lett.* **2**, 5 (2012).

Figures

