

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Enhanced Dresshaus spin orbit coupling in the EDTA-decorated graphene FENGQI SONG, JIANLEI GE, Nanjing Univ — The graphene-based spin device is constructed by decorating the graphene sheet using the dysprosium complex $\text{Na}[\text{Dy}(\text{EDTA})(\text{H}_2\text{O})_3]5\text{H}_2\text{O}$ (EDTA-Dy), which shows the typical field-induced mononuclear single-molecule magnet behavior. The spin transport parameters are extracted from the suppressed weak localization in the magnetoresistance measurements. The mononuclear single-molecule magnet can increase the spin-orbit coupling strength of graphene. The proportion relation between spin relaxation and momentum scattering time are acquired by tuned the charge carriers density, which origins from Elliot-Yafet mechanism. The relationship between the strength of spin-orbit coupling and temperature can be divided into two types, one is temperature dependent and another is temperature independent. This enhances the Dresshaus spin orbit coupling, which is attributed to the pseudomagnetic field from the ripples.

Fengqi Song
Nanjing Univ

Date submitted: 08 Nov 2016

Electronic form version 1.4