TT-004 **<Invited Speaker>**

Chemically Modified Graphene and Their Hybrid Materials: Toward Printed Electronics

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Chemically modified graphene has been great interest for the application of printed electronics using solution prossesable technique. Here, we demonstrate a large area graphene exfoliation method with fewer defects on the basal plane by application of shear stress in solution to obtain high quality reduced graphene oxide (RGO). Moreover, we introduce a novel route to preparing highly concentrated and conductive RGO in various solvents by monovalent cation-π interaction. Nonco-valent binding forces can be induced between a monopole (cation) and a quadrupole (aromatic π system). The stability of this RGO dispersion was more sensitive to the strength of the cation–π interactions than to the cation–oxygen functional group interactions. The RGO film prepared without a post-annealing process displayed superior electrical conductivity of 97,500 S/m. Our strategy can facilitate the development of large scalable production methods for preparing printed electronics made from high-quality RGO nanosheets.

Keywords: chemically modified graphene, exfoliation, paste, conductivity, printed electronics