

Characterisation of graphene oxide and chemically converted graphene by capillary zone electrophoresis

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The preparation of processable graphene sheets in large quantities includes oxidation of graphite followed by the formation of stable aqueous colloids by electrostatic repulsion. One of the most common procedures includes preparation of graphene oxide (GO) nanoparticles, their disintegration by sonication and partial reduction of oxygen-containing functional groups to, so called, chemically converted graphene (CCG) nanoparticles¹. Each of steps requires a careful characterisation of size, charge and aggregation of nanoparticles. Capillary zone electrophoresis (CZE) is a simple and efficient separation and analytical technique for the characterisation of various nanoparticles.

The possibility of capillary electrophoretic separation of GO and CCG nanosheets was investigated. The data on aggregation and electrophoretic mobility of nanoparticles having different size and charge were obtained using various background electrolytes and detection systems.

- [1] Müller M.B., Quirino J.P., Nesterenko P.N., Haddad P.R., Gambhir S., Li D., Wallace G.G., *J. Chromatogr. A* **1217**, 7593 (2010).
- [2] Li D., Mueller M.B., Gilje S., Kaner R.B., Wallace G.G. *Nature Nanotechnology* **3**, 101 (2008).