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Modification of electronic properties of nanographite due to chemical treatments DMITRIY DIKIN, SASHA STANKOVICH, XINQI CHEN, RICHARD PINER, RODNEY RUOFF , Dept of Mechanical Engineering, Northwestern University, OLEKSANDR CHERNYASHEVSKYY , Dept of Physics & Astronomy, Northwestern University, SONBINH NGUYEN , Dept of Chemistry, Northwestern University — Electronic and magnetic properties of nanostructured graphite platelets and individual graphene sheets are highly anisotropic and exhibit high sensitivity to adsorption, doping and intercalation. The magnetization results obtained at room temperature for pristine graphite, graphite oxide, and chemically or thermally reduced graphite oxide show direct correlation between oxidation and reduction treatments. Diamagnetic response for graphite oxides is significantly decreased compared to the pristine material, and is restored back in chemically and thermally reduced samples, so the electronic properties can be modified in a controlled manner. At low temperatures all of the measured samples exhibit paramagnetic behaviour, which dominates for thermally treated graphite oxide. SEM and AFM are also used in our study to analyse the electronic and chemical modifications of nanographite. We gratefully acknowledge the *NASA University Research, Engineering and Technology Institute on Bio Inspired Materials (BIMat)* under award No. NCC-1-02037. SEM was done at the Electron Probe Instrumentation Center at Northwestern University.

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