Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting information to

The effectiveness of Soxhlet extraction as a method of GO rinsing as precursor of high quality graphene

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Tables

Table S1. ICP data obatianed for Soxhlet-washed and unwashed graphite-oxide.*

	Ca	K	Mg	Mn	Na
GO-Soxhlet	<0.0047	1.68	0.054	1.70	1.03
Unwashed GO	5.01	21.74	2.27	26.44	2.72

*- All values in ppm.

The GO paste was taken directly from the reactor at the end of Hummer's method process and seperated from the oxidative solution by sentrifugtion. The data show, therefore the impurities in the GO sample and not the reactants in the solution.

Table S2. Elemental analysis of graphite, graphite-oxide and laser-reduced GO.*

	C	H	O	N	S	O/C ratio
Graphite	96.52	0.02	3.73	0	0.67	0.038
GO-Soxhlet	30.54	2.62	65.73	0.06	0.03	2.152
Reduced-GO	70.38	10.15	15.51	3.53	0.33	0.22

*- All values in ppm.

Table S3. ICP data obatianed for graphene oxide and laser reduced graphite-oxide.*

	Fe	K	Mg	Mn	Na
GO-Soxhlet	134	548	176	669	423
rGO	166	360	152	534	1153

*- All values in ppm.

Table S4. XPS analysis of soxhlet-washed, traditionally (centrifuge) washed and commercial graphite-oxide.

	C	O	S	Ca	P	N
Soxhlet	60.04	36.28	3.63	0.02	Not detected	Not detected
Traditional	53.15	38.01	5.93	0.92	0.99	Not detected
Commercial	60.71	33.68	2.92	Not detected	Not detected	1.69

Table S5. ICP of DI water and paper-soaked DI water. Data in ppm for a single filter paper (5.55 grams).

	Mg
DI Water	Not detected
Paper-soaked DI water	10.55

The Mg containt in the Soxhlet GO was relatively high (176 ppm). It was higher than in the GO produced in the same batch in Hummers' method washed bycentrifugation and weven higher than the unwashed sample. We assumed the source is in the Soxhelet proccees, and suspected the filter paper. To identify the source of the relatively high manganise in the Soxhlet wahed GO we soaked the paper in hot DI water and measure the Mg content. Indeed, the Mg level was high, what proves that this impurity is originated form the paper. Using more clean paper will result in low Mg content**.**

Figures

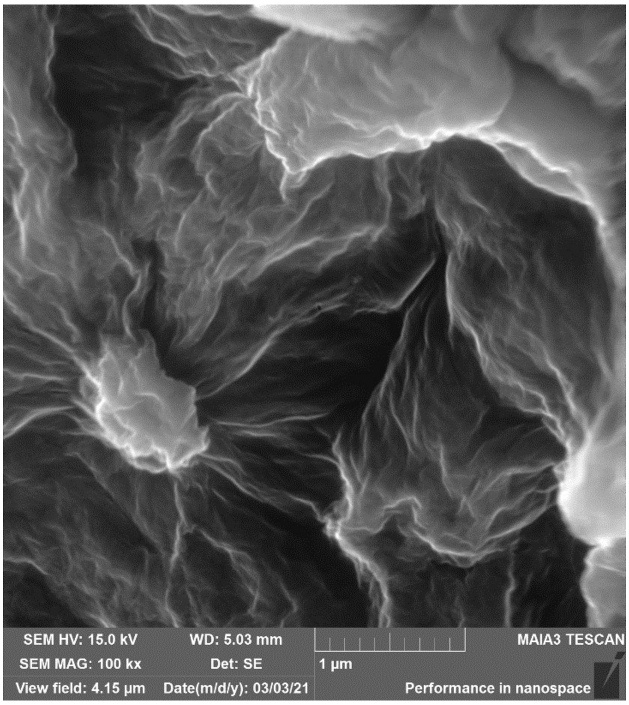

Figure S1: Typical scanning electron microscope (SEM) image of graphite-oxide after washing with Soxhlet extractor.

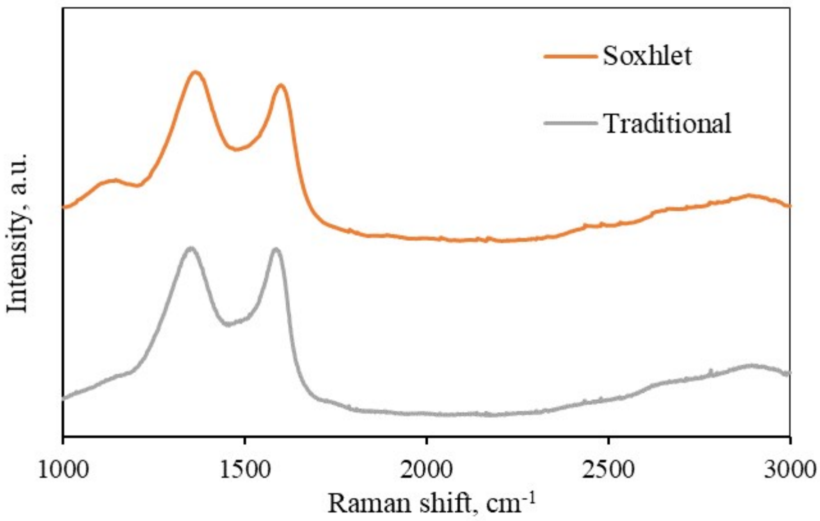

Figure S2: Raman spectra of Soxhlet- and traditionally- washed GO stimulated with 532 nm wavelength beam.

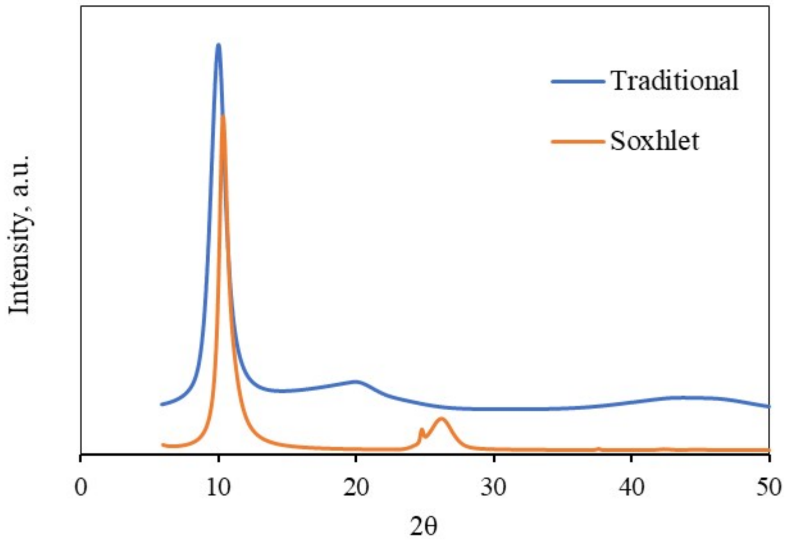

Figure S3: X-ray Diffraction (XRD) spectra of Soxhlet- and traditionally washed graphite-oxide. The 10^0 and $20/26^0$ 2θ correspond to the (002) inter-layer plane of GO and graphite, respectively.

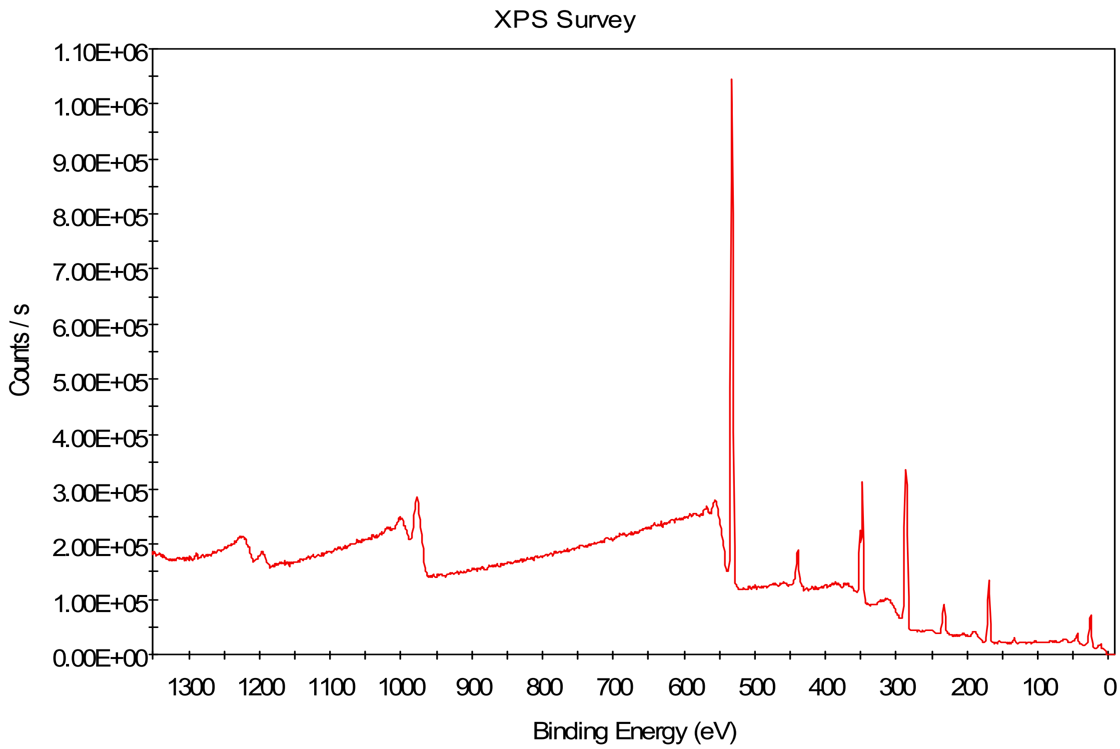

Figure S4: XPS survey for elemental analysis of the Soxhlet washed GO

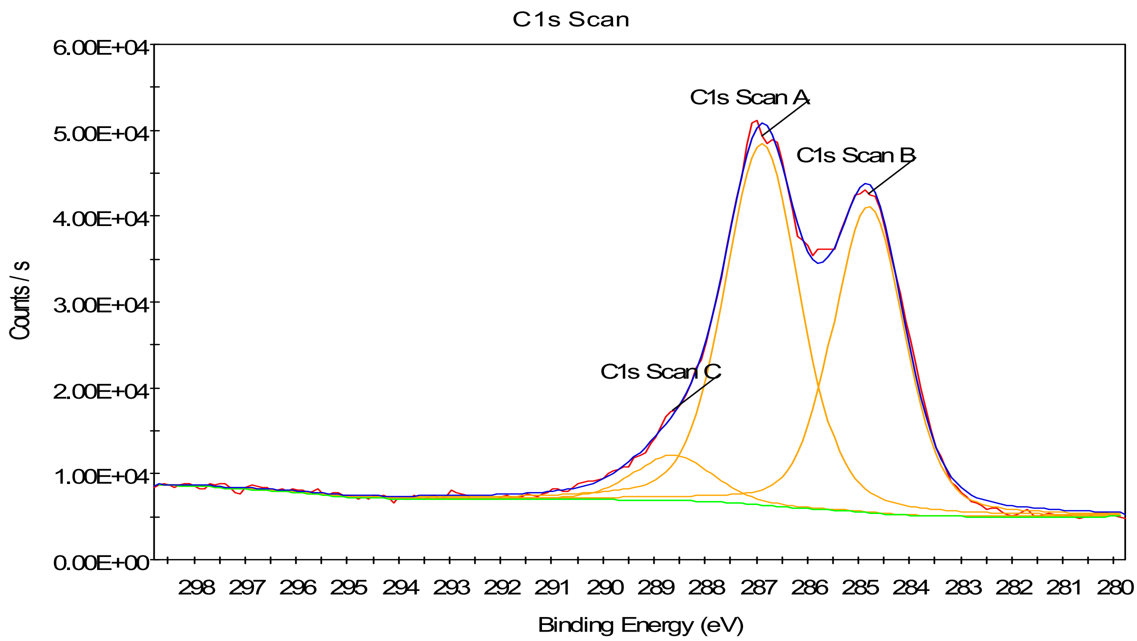

Figure S5: C1s scan and fitting for the Soxhlet washed GO.

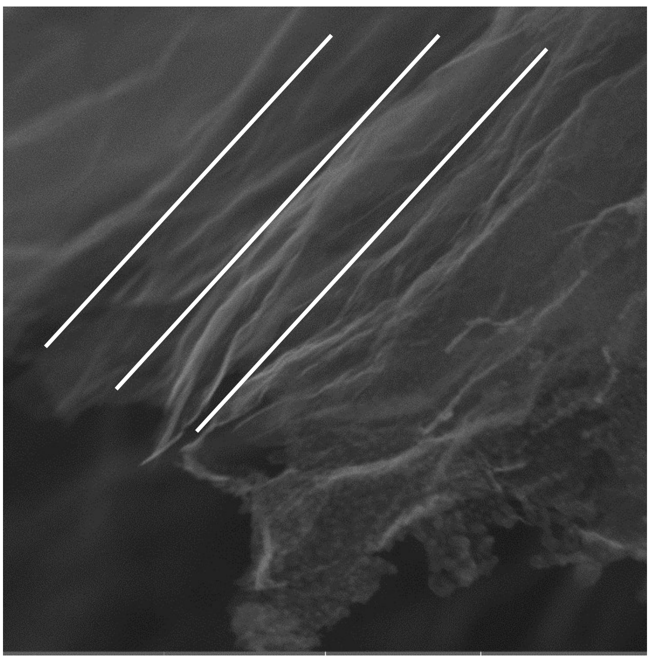

Figure S6: SEM image showing layered structure of reduced Graphite-oxide.

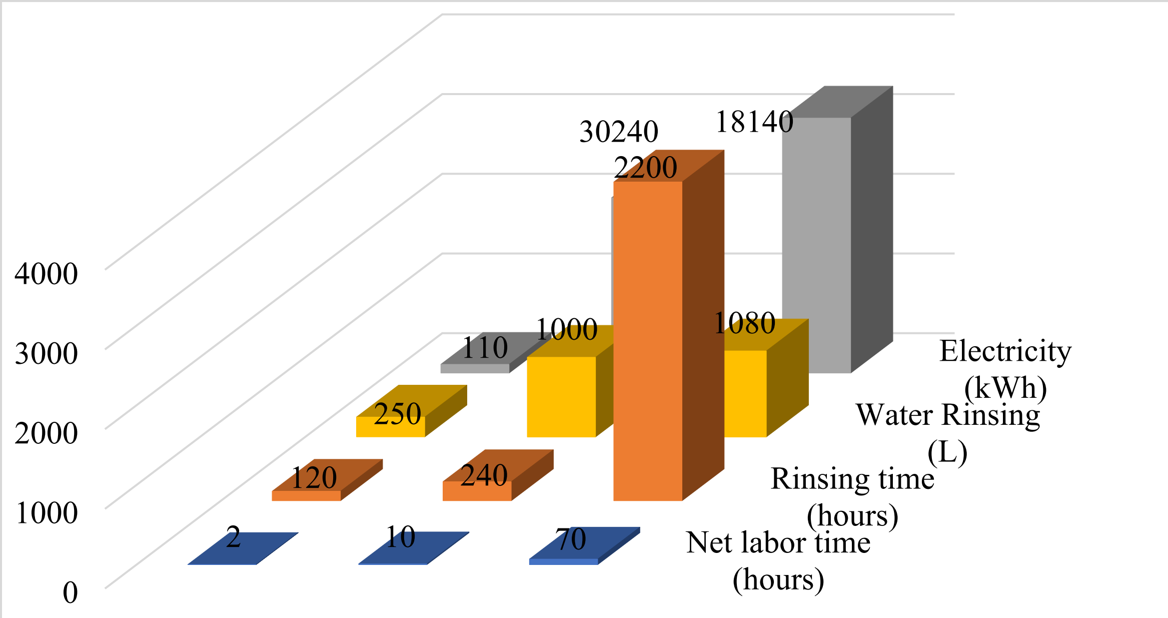

Figure S7. Comparison of rinsing requirements at different methods for 1kg graphite-oxide.