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PRODUCT TEST REPORT

Reduced Graphene Oxide (rGO)

Equipment used

XPS : Thermo Scientific™ ESCALAB™ Xi+ X-ray Photoelectron Spectrometer
RAMAN : BRUKER SENTERRA II -Confocal Raman Microscope
BET : Quantachrome Instruments, Autosorb iQ Station 2- automated gas sorption analyzer
FTIR : Bruker VERTEX 80 Fourier Transform Infrared Spectrometer

Sample Details

Graphite Source : Kahatagaha Graphite (63 -125 μ)
Appearance : Soft Black Powder

Analysis and Results

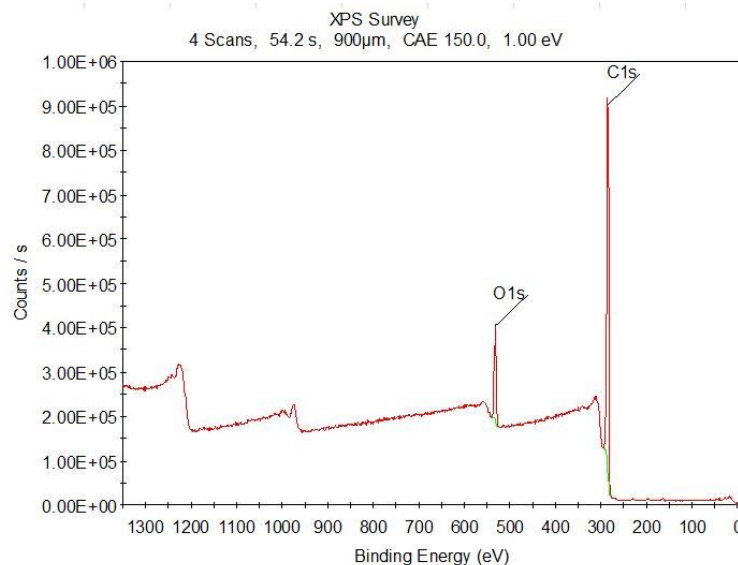
X-ray Photoelectron Spectroscopy (XPS)

The sample was mounted on a glass substrate using double tape. Three different spots per sample were analyzed. Parameters were set as follows, X-Ray source: Monochromatic Al Kα (1486.6 eV), Spot size: 900 μm. Survey scans and high resolution scans were collected with pass energies of 150 and 20 eV and with a step size of 1.0 and 0.05 eV. Detailed spectra processing was performed by Thermo Avantage (5.982) software

Results

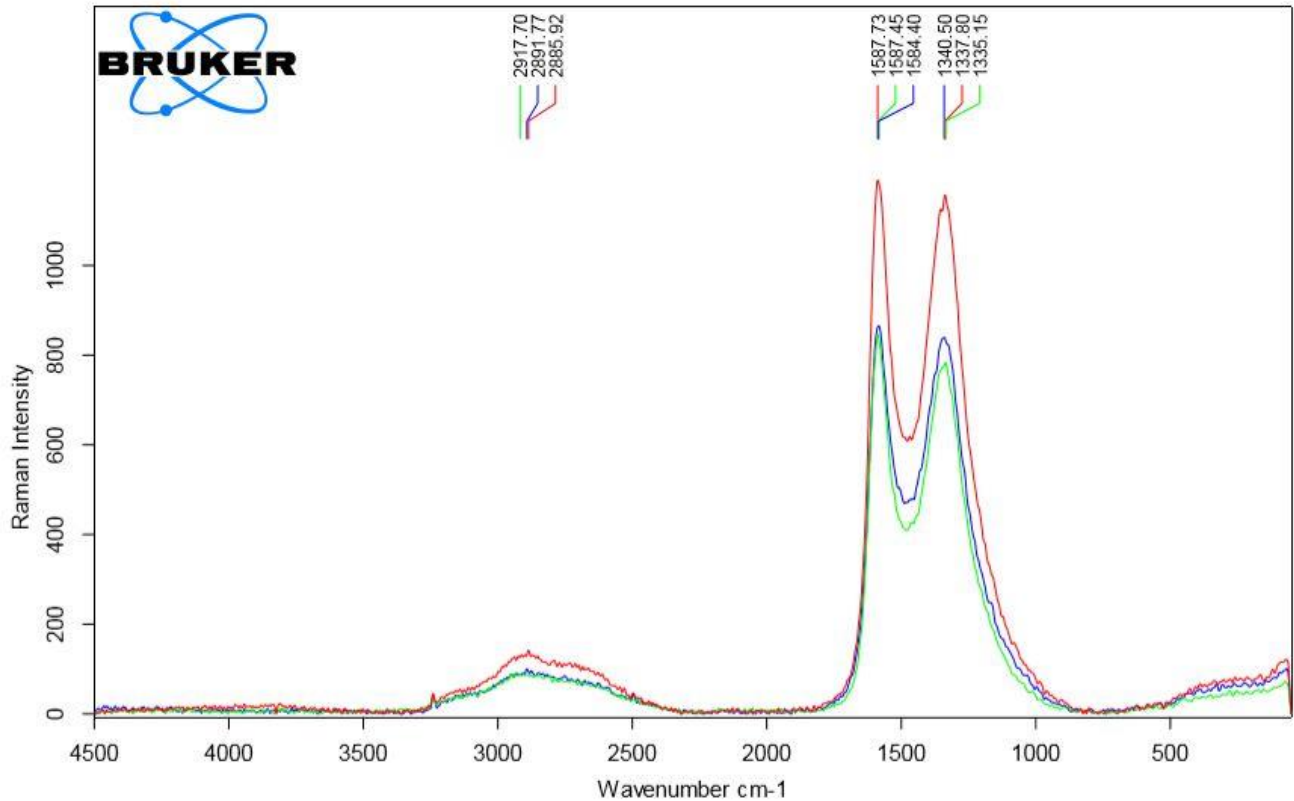
Name	Peak BE	Atomic %			Avg. %
		scan 1	scan 2	scan 3	
C1s	283.19	89.16	89.82	90.62	89.87
O1s	531.82	10.84	10.18	9.38	10.13
S2p	-	0.00	0.00	0.00	0.00
Cl2p	-	0.00	0.00	0.00	0.00
Fe	-	0.00	0.00	0.00	0.00

*C/O ratio: 8.87



RAMAN Analysis

The sample was drop casted on the microscopic glass slides. Three different spots were analyzed. Parameters were set as follows. 532 nm, green laser was used with 20X optical zooming.



*Average I_D/I_G ratio: 0.956

BET Surface Area Analysis

The sample was analyzed for Multi-Point BET Surface Area and BJH pore size distributions. Parameters were set as follows, Approx. Outgas Time: 3.0 hrs , Final Outgas Temp. : 350 °C, Analysis gas : Nitrogen, Cell Type : 6mm, Bath temp. : 77.35 K

Sample	Average BET Surface Area (m ² /g)
rGO	~ 700

FTIR Analysis

Attenuated total reflection Fourier transform infrared (ATR-FTIR) spectra of the reduced graphene oxide were recorded in the region 800 to 4000 cm^{-1} at a resolution of 4 cm^{-1} .

