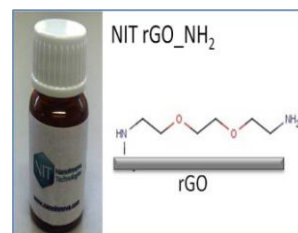
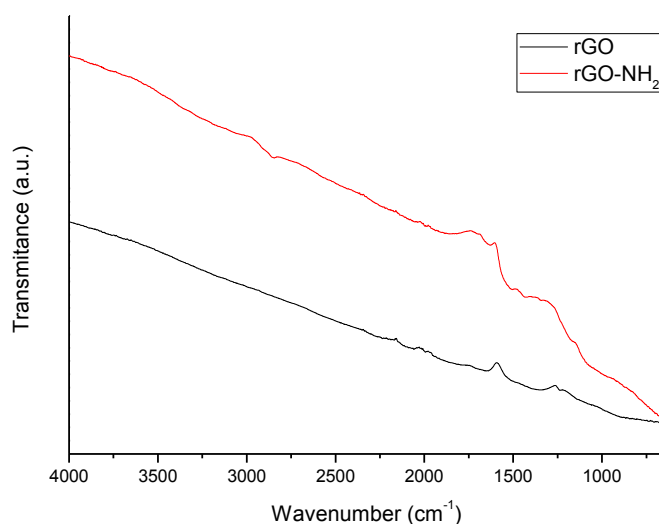


Reduced Graphene Oxide-NH₂ Characterization sheet

Reported data: FTIR Spectroscopy, Scanning Electron Microscopy, X-ray diffraction (XRD), X-ray Photoelectron Spectroscopy (XPS), elemental analysis, NH₂ loading and Zeta-potential.

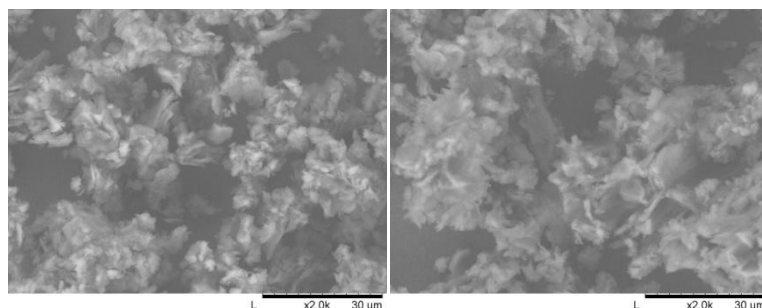


- FTIR Spectroscopy: Attenuated Total Reflectance (ATR)

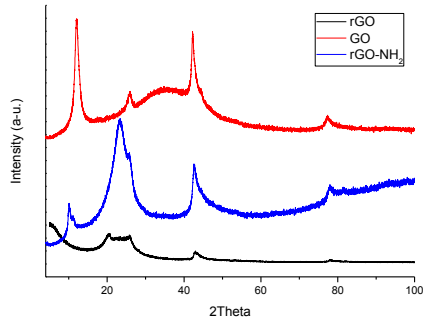


Assignment (cm⁻¹): For rGO-NH₂ 1530 (N-H bending), 1437 (C-N stretching).

- Scanning Electron Microscopy



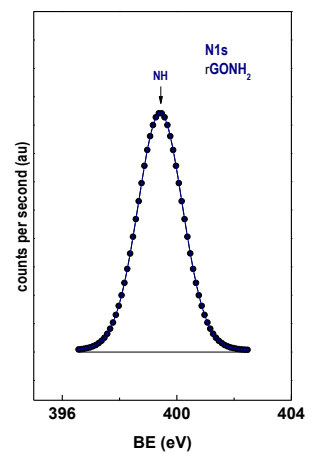
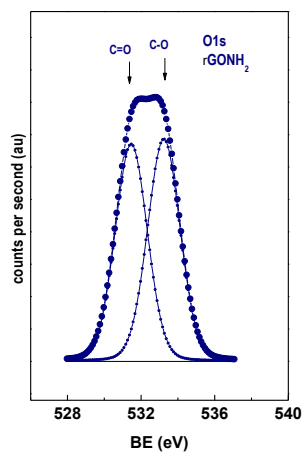
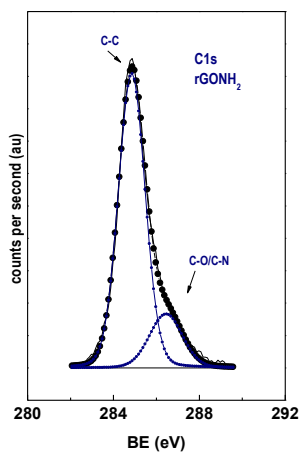
- XRD



XRD pattern of GO, rGO and rGO-NH₂.

- XPS

| | C1s | O1s | N1s | O/C atomic ratio | N/C atomic ratio |
|---------------------|--|--------------------------|------------|-------------------------|-------------------------|
| rGO-NH ₂ | 284.8 (82) 286.4 (18) | 531.5 (49) 533.2 (51) | 399.4 | 0.006 | 0.162 |
| GO-NH ₂ | 284.8 (52) 286.2 (37) 288.0 (11) | 531.1 (30) 532.6 (70) | 399.6 | 0.255 | 0.080 |
| GO | 284.8 (38) 286.6 (54) 288.4 (8) | 531.5 (21) 532.7 (79) | -- | 0.655 | -- |



Binding energies (eV) and deconvoluted peaks (%) for C1s, O1s and N1s core levels.

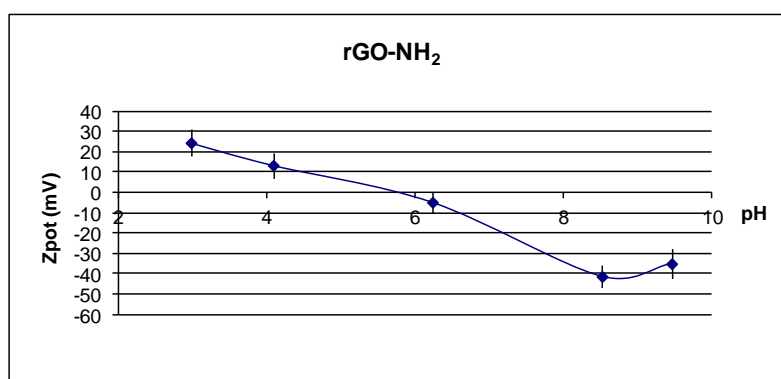
- Elemental analysis

| | %C | %H | %N | %S |
|---------------------|-------|------|------|------|
| rGO-NH ₂ | 69.82 | 3.59 | 6.98 | 0.02 |
| GO-NH ₂ | 67.61 | 3.72 | 6.41 | 0.04 |
| GO | 53.24 | 2.51 | 0.04 | 0.91 |

- The number of free amino groups measured with a quantitative Kaiser test: 0.1 mmol NH₂/g
- Amount of NH₂ groups

In order to estimate the amount of NH₂ groups in rGO-NH₂ a reaction with tetrabromophthalic anhydride performed and the Br amount was quantified by X-ray fluorescence spectroscopy and by the Schöniger flask test. The value obtained corresponds to 0.23 mmol/g and 0.21 mmol/g respectively.

- Zeta-potential



Zeta-potential versus pH curve for rGO-NH₂.