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# Supporting Information

for

# Upcycling agroindustrial waste into graphene oxide supports for gold nanoparticles: toward sustainable nanomaterials

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## Additional experimental data

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O 1s XPS spectra of GO, rGO, Agro-GOP, Agro-GOX, and Agro-GOC are shown in Figure S1. Four components labeled as O1, O2, O3, and O4 are reported. O1 (530 eV) is assigned to C=O, O2 (531 eV) to (C=O)-OH, O3 (532 eV) corresponds to C–O bonding, and O4 (533.0 eV) to C–O–C [1-3].

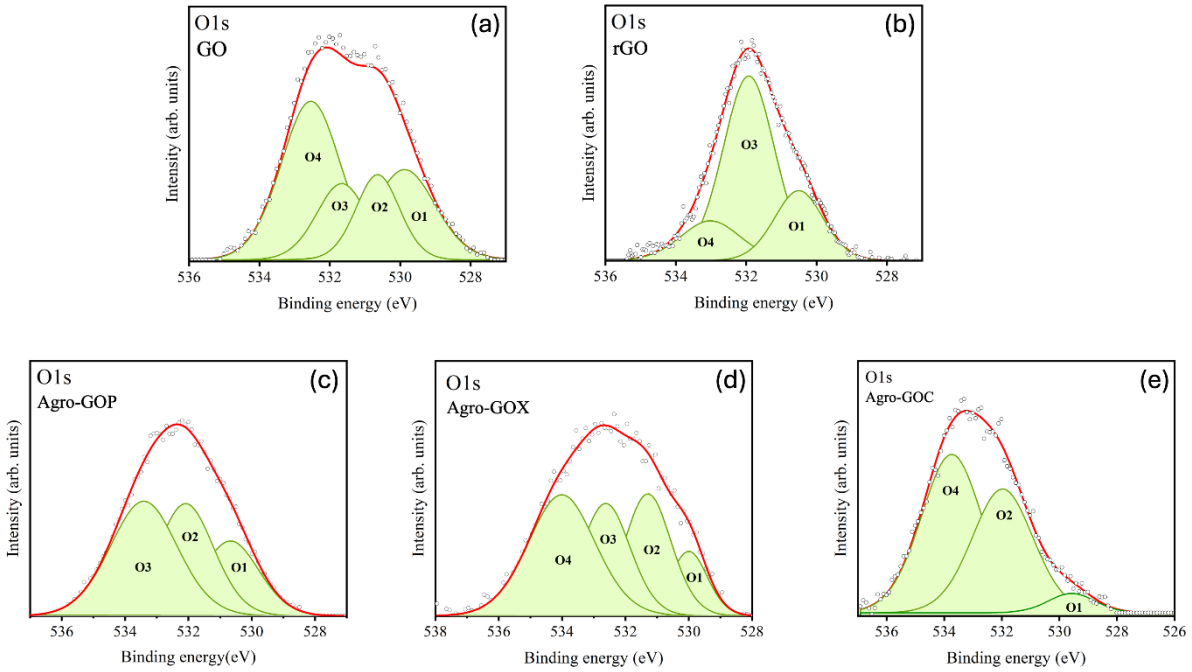


**Figure S1:** O 1s XPS spectra of (a) GO, (b) rGO, (c) Agro-GOP, (d) Agro-GOX, (e) Agro-GOC.

**Table S1:** Relative area of the components in the O 1s analysis spectra for GO samples.

| Relative area (%) | | | | |
|---|---|---|---|---|
| **sample** | **O1**<br>**530 eV**<br>**C=O** | **O2**<br>**531 eV**<br>**(C=O)-OH** | **O3**<br>**532 eV**<br>**C–O** | **O4**<br>**533.0 eV**<br>**C–O–C** |
| **GO** | 26.9 | 14.3 | 15.3 | 43.5 |
| **rGO** | 22.3 | 0 | 62.2 | 15.5 |
| **Agro-GOP** | 23.4 | 34.6 | 42.0 | 0 |
| **Agro-GOX** | 11.0 | 26.3 | 25.5 | 37.2 |
| **Agro-GOC** | 8.3 | 35.0 | 0 | 56.0 |

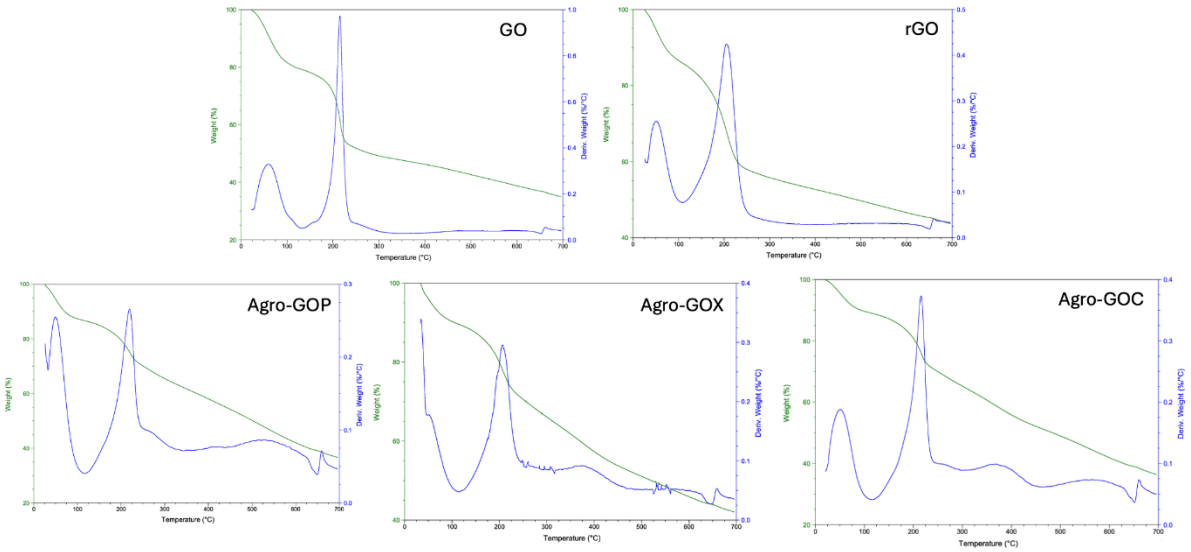


**Figure S2:** Derivative thermogravimetric (DTG) curves of GO, rGO, and agro-derived samples (Agro-GOP, Agro-GOX, and Agro-GOC).

# References


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