

## SUPPORTING INFORMATION

# Facile covalent functionalization of graphene oxide using microwaves: bottom-up development of functional graphitic materials

Manuela Melucci,<sup>a,b\*</sup> Emanuele Treossi,<sup>a</sup> Luca Ortolani,<sup>c</sup> Giuliano Giambastiani,<sup>b</sup> Vittorio Morandi,<sup>c</sup> Philipp Klar,<sup>d</sup> Cinzia Casiraghi,<sup>d</sup> Paolo Samori,<sup>a,e</sup> and Vincenzo Palermo<sup>a\*</sup>

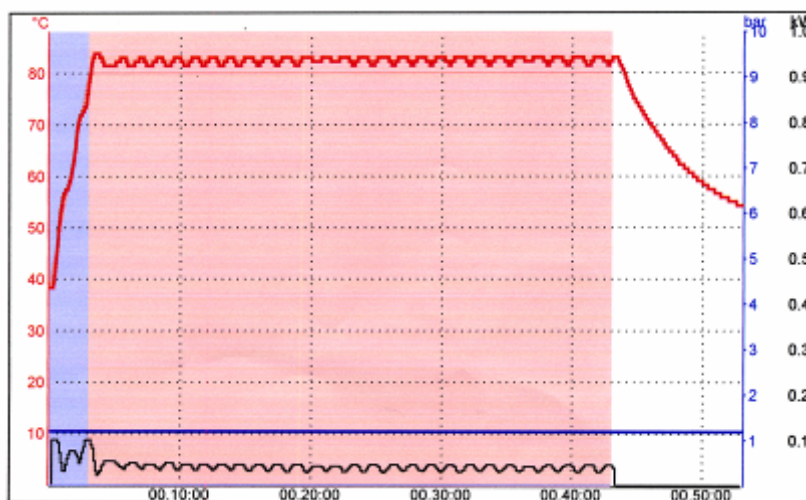


Figure S1: Microwave heating ramp showing the applied power and the instant temperature used during the GOT4 synthesis. Red curve: temperature (°C), blue curve: pressure (bar), black curve: energy (kW).

## Quantitative comparison of optical properties of GOT4, T4-Si and GO

The comparison was carried out as follows. Four solutions were prepared, all in DMF:

- A) a solution of GOT4.
- B) a mixture of GO and T4-Si having the same (total) concentration in weight of sol. A, and the same T4-Si fraction (2.6% in weight) of GOT4, as found by TGA.
- C) a solution having the same T4-Si concentration of B, but without GO.
- D) a solution having the same GO concentration of B, but without T4-Si.

The absorption of all these different solutions is reported in fig. 5c. The emission of sol. A, B, C is shown in fig. 5d in the main text.

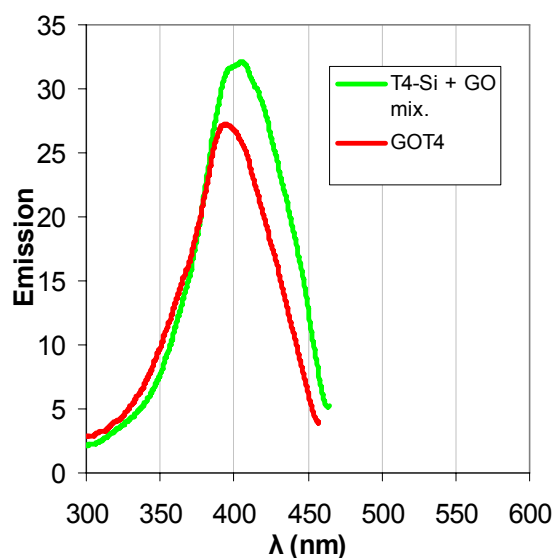


Fig. S2: Excitation spectra of GOT4 and GO+T4-Si mixture,  $\lambda_{em}$  482 nm.

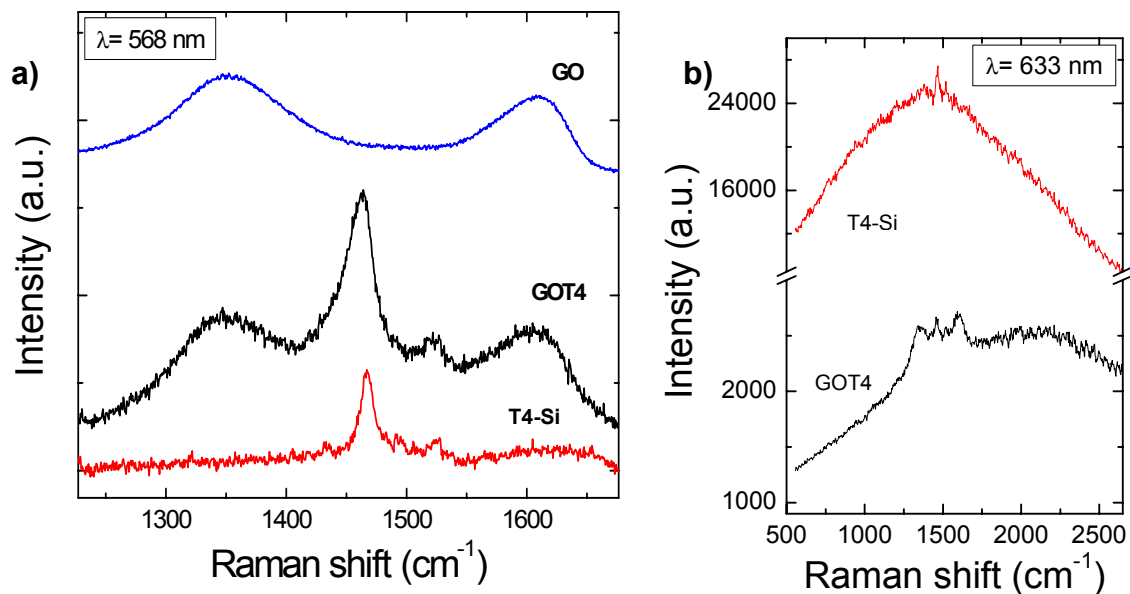


Figure S3 Raman spectra measured at different exciting frequencies. a) Raman spectra measured at 568 nm of GO, T4-Si and GOT4. The photoluminescence background has been removed. b) Raman spectra of T4 and GOT4 measured at 633 nm with a 600 lines/mm grating in order to show the whole photoluminescence background. Strong quenching of the photoluminescence is observed in GOT4, compared to T4-Si.

**N-(3-(triethoxysilyl)propyl) 2,2':5',2'':5'',2'''-quaterthiophene -5-carboxamide (T4-Si, 2)**

m.p. 99-101°C, EI-MS  $m/z$  577 ( $M^+$ ).  $^1\text{H}$  NMR (DMSO, TMS/ppm, 400MHz)  $\delta$  8.55 (m, 1H), 7.71 (d,  $J=3.6$  Hz, 1H), 7.55 (d,  $J=4.4$  Hz, 1H), 7.40 (d,  $J=4.0$  Hz, 1H), 7.35 (m, 4H), 7.30 (d,  $J=4$  Hz, 1H), 7.12 (q, 1H), 3.75 (q, 6H), 3.20 (m, 2H), 1.55 (m, 2H), 1.15 (t, 9H), 0.60 (m, 2H).  $^{13}\text{C}$  NMR (DMSO, TMS/ppm)  $\delta$  160.4, 139.6, 138.9, 135.9, 135.8, 135.7, 134.7, 134.3, 128.7, 128.4, 126.2, 125.9, 125.5, 125.2, 125.0, 124.6, 124.4, 57.6, 41.8, 22.7, 18.1, 7.3. Anal. Calcd for  $\text{C}_{26}\text{H}_{31}\text{NO}_4\text{S}_4\text{Si}$  (577,87): C, 54.04; H, 5.41. Found: 54.12; H, 5.50.

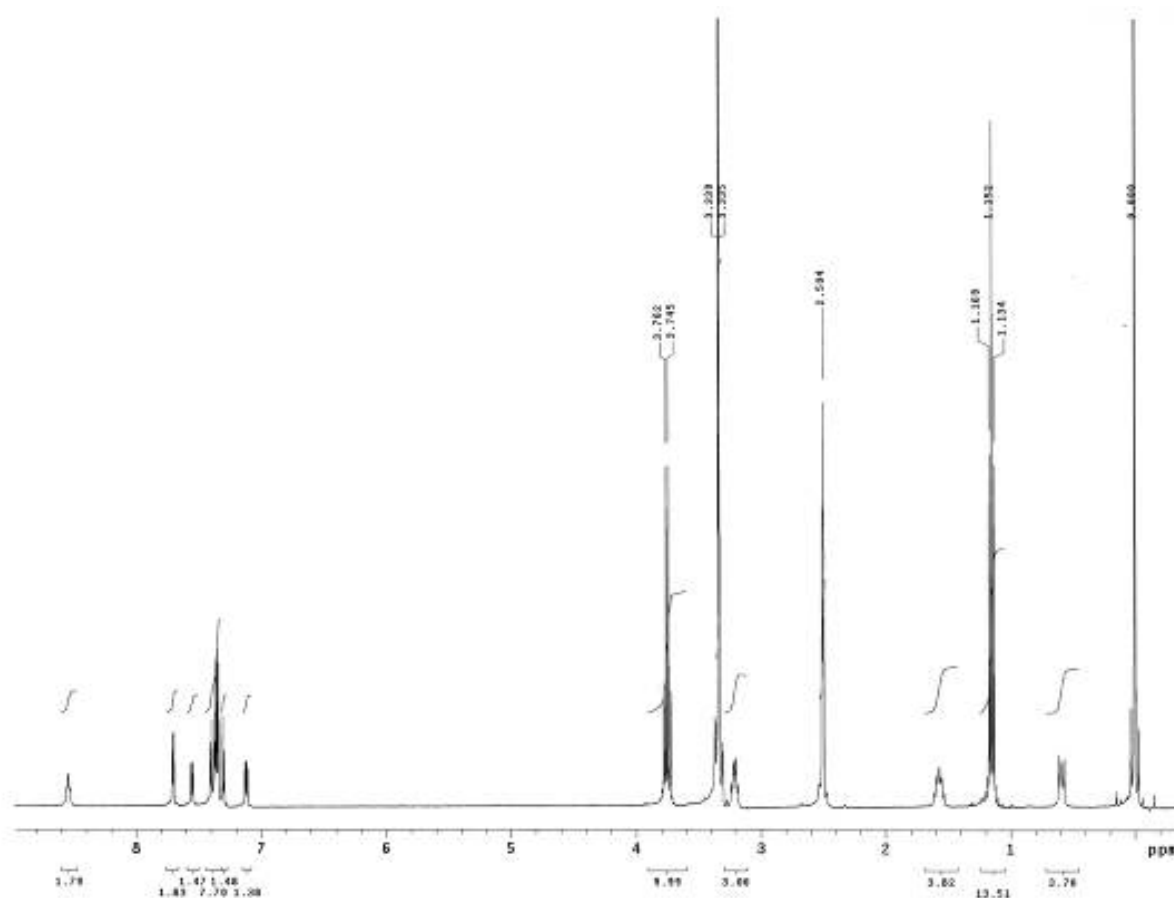


Fig. S4.  $^1\text{H}$  NMR spectrum of compound T4-Si.

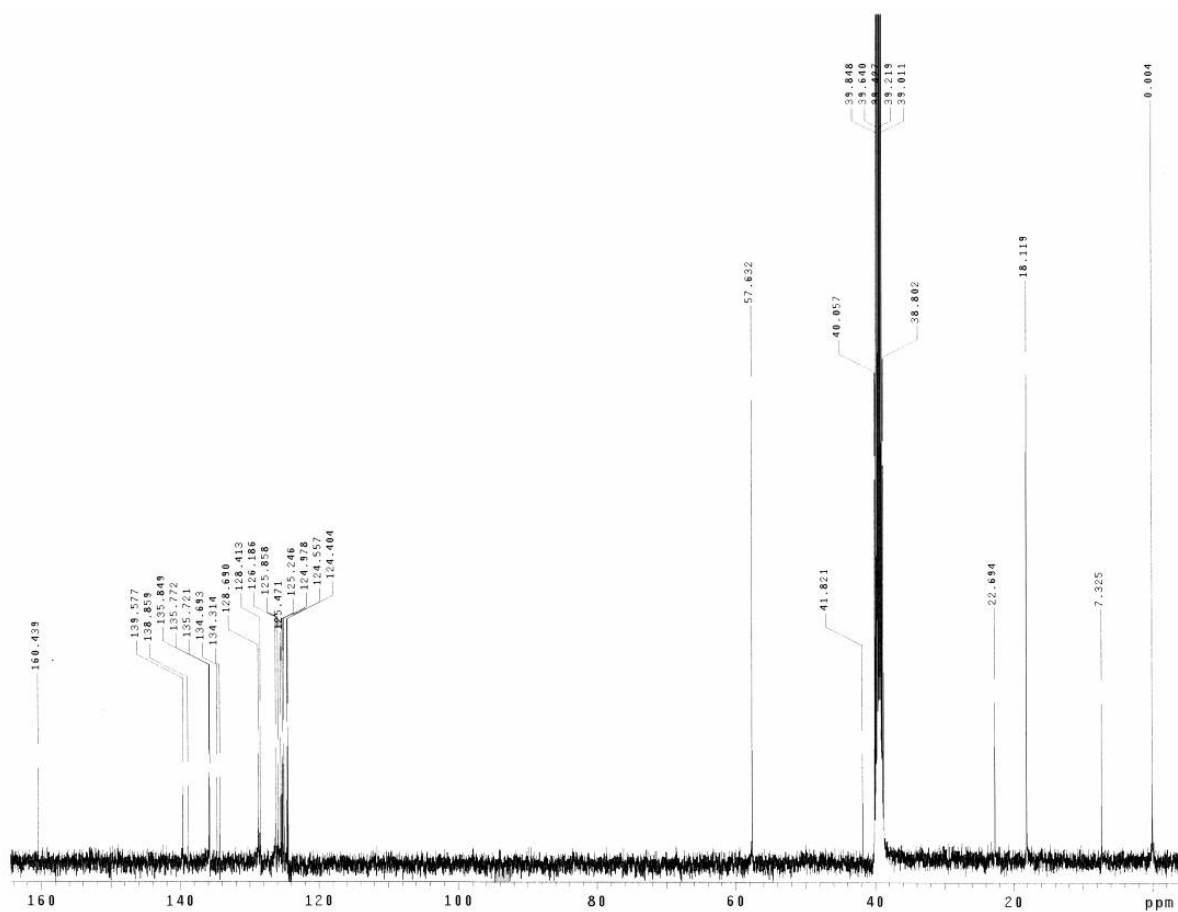


Fig S5.  $^{13}\text{C}$  NMR spectrum of compound T4-Si.