Supporting Information

Graphene based materials: the key for a successful application of pHEMA as a blood contacting device

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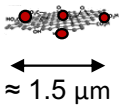
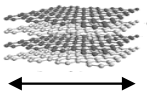
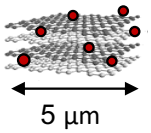
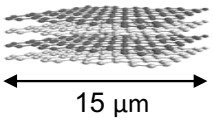
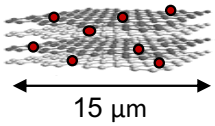
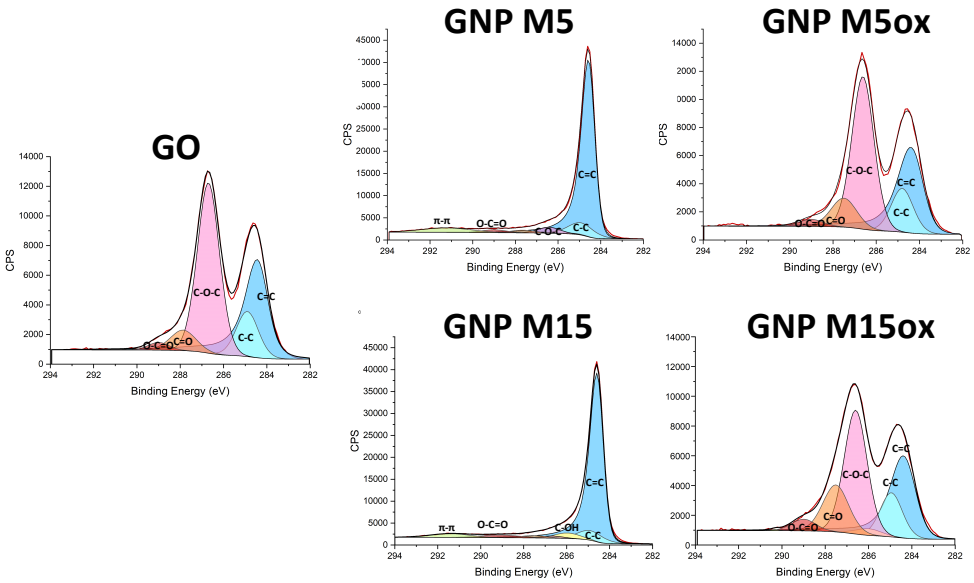
Table S.1. – GBM used in this work.

GO	GNP M5	GNP M5ox	GNP M15	GNP M15ox
 ≈ 1.5 µm	 5 µm	 5 µm	 15 µm	 15 µm
Obtained from oxidation of graphite through MHM and exfoliated in ultrasound water bath (6h)	Commercially available	Obtained from oxidation of GNP M5 through MHM.	Commercially available	Obtained from oxidation of GNP M5 through MHM.

Scheme S.1 – Preparation of pHEMA/GBM films and conduits.



GBMs	Chemical group (%)						
	C sp2 (284.2–284.5 eV)	C sp3 (284.8–284.9 eV)	C-OH (285.3–286.0 eV)	C-O-C (286.1–286.6 eV)	C=O (287.5–287.9 eV)	O-C=O (288.8–288.9 eV)	π-π (290.0–292.0 eV)
GO	34.0	12.0	-	45.4	6.4	1.9	0.3
GNP M5	77.6	8.5	0.5	3.6	1.8	2.0	6.1
GNP M5ox	32.9	12.3	-	43.0	9.5	2.1	0.3
GNP M15	78.4	7.1	4.0	1.4	1.8	3.2	4.1
GNP M15ox	31.1	12.2	2.2	35.8	15.2	3.4	0.1

Figure S.1 – C1s high resolution spectra of GO, GNP M5, GNP M5ox, GNP M15 and GNP M15ox.

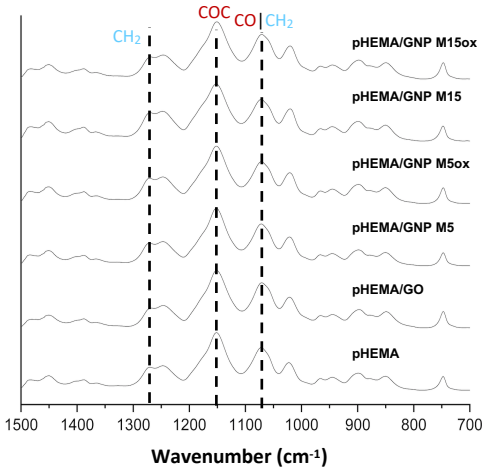
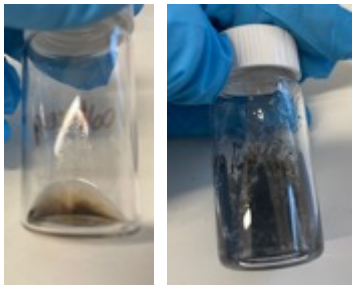


Figure S.2 - Infrared spectra of pHEMA and pHEMA/GBMs composites.

Table S.2 - Solubility of different formulations of pHEMA and pHEMA/GBM without TEGDMA in different solvents

	pHEMA	pHEMA				
		GO	GNP M5	GNP M5ox	GNP M15	GNP M15ox
Solvent	Without TEGDMA					
DMF	✗	✓	✗	✓	✗	✓
DMSO	✗	✓	✗	✓	✗	✓
THF	✗	✗	✗	✗	✗	✗
Hexane	✗	✗	✗	✗	✗	✗
Ethanol	✗	✓	✗	✓	✗	✓

a)



b)

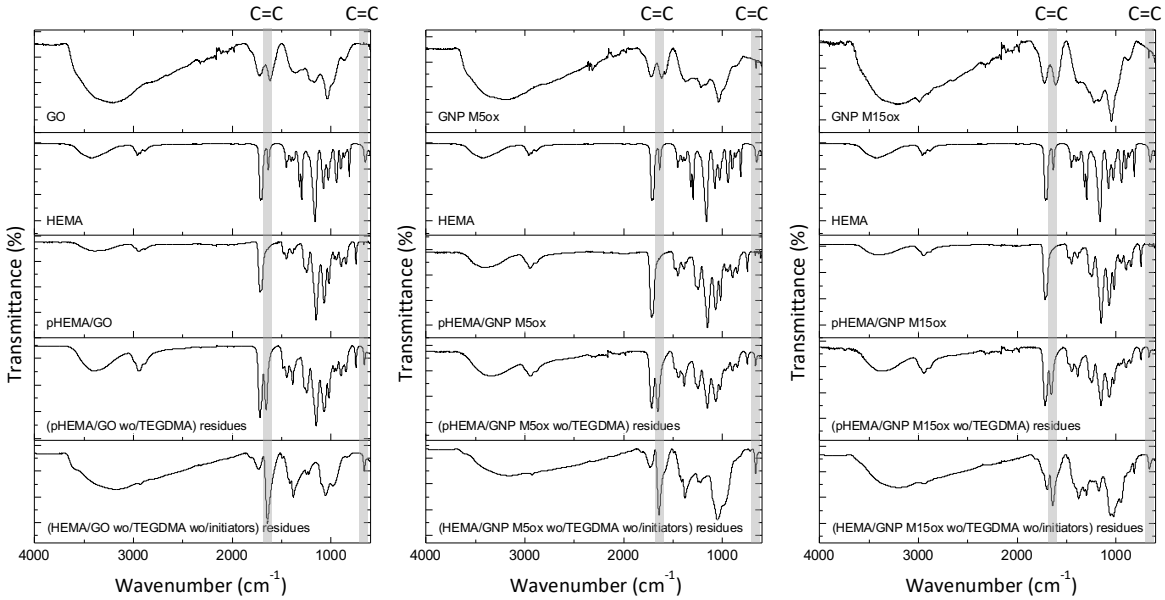


Figure S.3 – a) Representative images of pHEMA/GO (on the left) and pHEMA/GNP M15 (on the left) without TEGDMA after contact with DMF under stirring overnight. b) FTIR spectrum of GBM, HEMA monomers, pHEMA/GBMs, (pHEMA/GBMs wo/TEGDMA) residues and (HEMA/GBMs wo/TEGDMA wo/initiators) residues (from top to bottom spectra of each graph). Each graph corresponds to a GBM material. Residues were obtained by dissolving the materials in DMF followed by rinsing and drying.

Table S.3 – Zeta potential of GBM in dH_2O and polymerization media.

Zeta potential (mV)					
			GBM		
Dispersant	GO	M5	M5ox	M15	M15ox
dH_2O	-33.0 ± 1.46	-3.27 ± 1.26	-36.6 ± 0.85	-7.06 ± 3.37	-35.1 ± 1.23
Polymerization media (dH_2O, Ethylene Glycol, HEMA, TEGDMA)	-0.461 ± 0.05	0.167 ± 0.03	-0.766 ± 0.07	0.246 ± 0.02	-1.07 ± 0.13

Table S.4 – Pig information, blood profiles evaluated by a hematology analyzer (Advia 2120, Siemens Healthineers)

Weight	Pig 1 57 kg		Pig 2 55 kg	
	Before	After	Before	After
Body temperature	38.9	39.8	39	39.5
White Blood Cells (cells/μL)	11.91 x 10^3	12.58 x 10^3	20.02 x 10^3	18.87 x 10^3
Red Blood Cells (cells/μL)	5.40 x 10^6	6.15 x 10^6	5.96 x 10^6	5.86 x 10^6
Platelets (cells/μL)	221 x 10^3	242 x 10^3	386 x 10^3	368 x 10^3
Platelets clumps	No	No	No	No
Blood pressure *(mmHg)*	100/70	99/78	99/78	97/70
Blood flow Carotid Artery *(mL/min)*	201	-	200 (mL/min)	-