

## Supplementary Material

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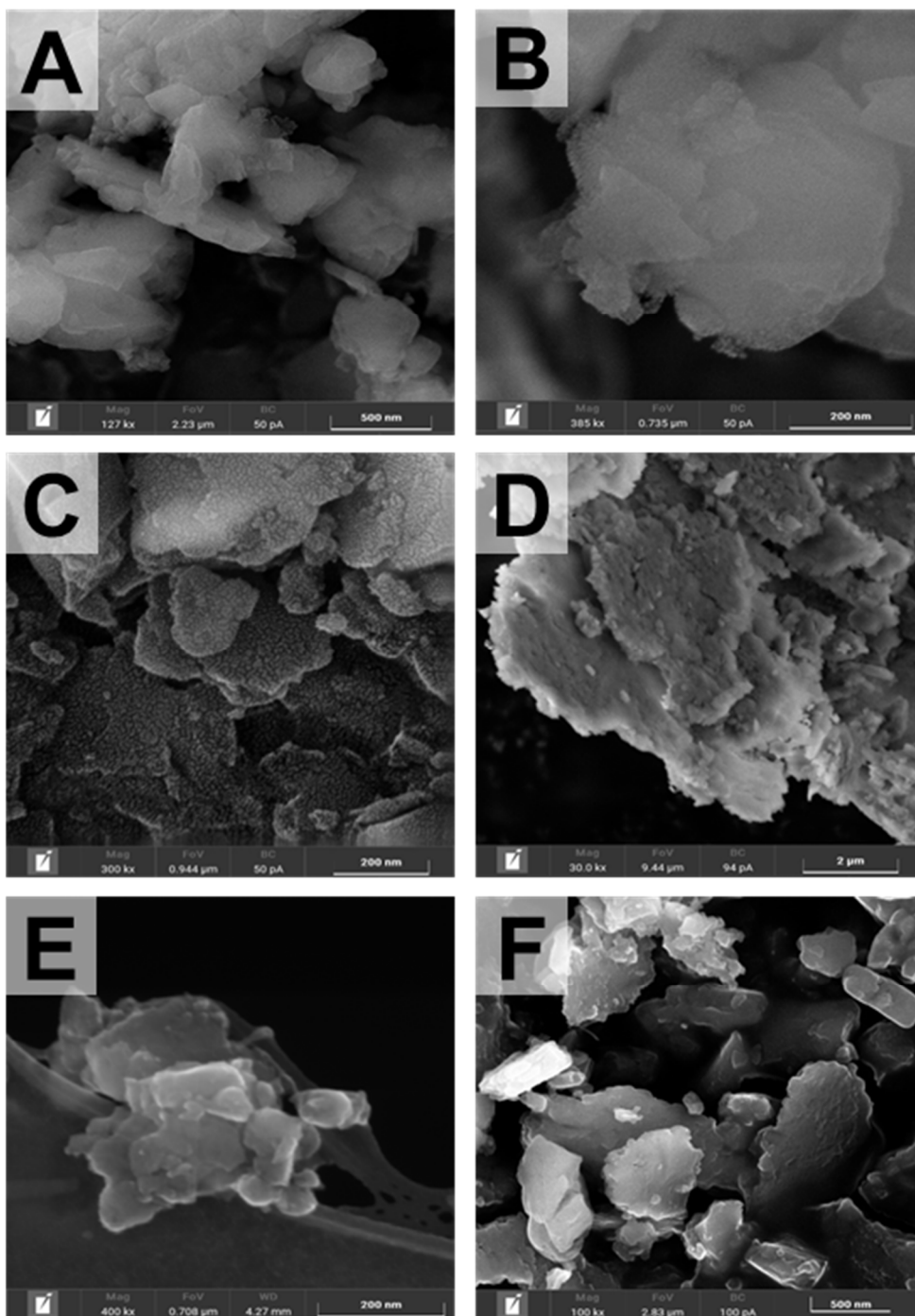
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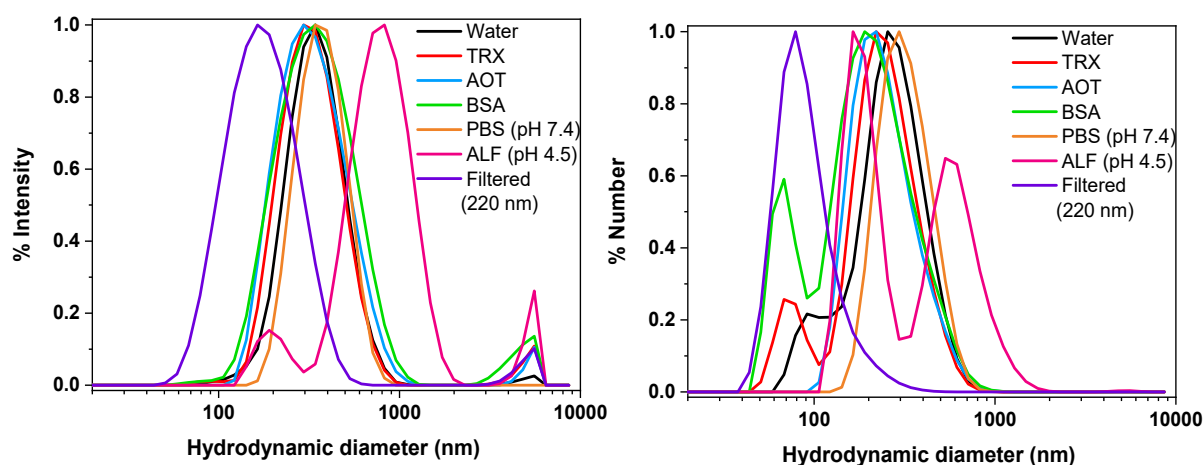
This document includes:

1. FE-SEM micrographs of gQ-n1, gQ-n2 and gQ-n3;
2. DLS analysis of gQ-n1 and gQ-n2;
3. TEM micrographs of gQ-n3;
4. SEM-EDS analysis of gQ before milling;
5. Full range IR spectra ( $1300\text{ cm}^{-1} - 4000\text{ cm}^{-1}$ ) of gQ-n1, n2, and n3 before and after D<sub>2</sub>O exchange.

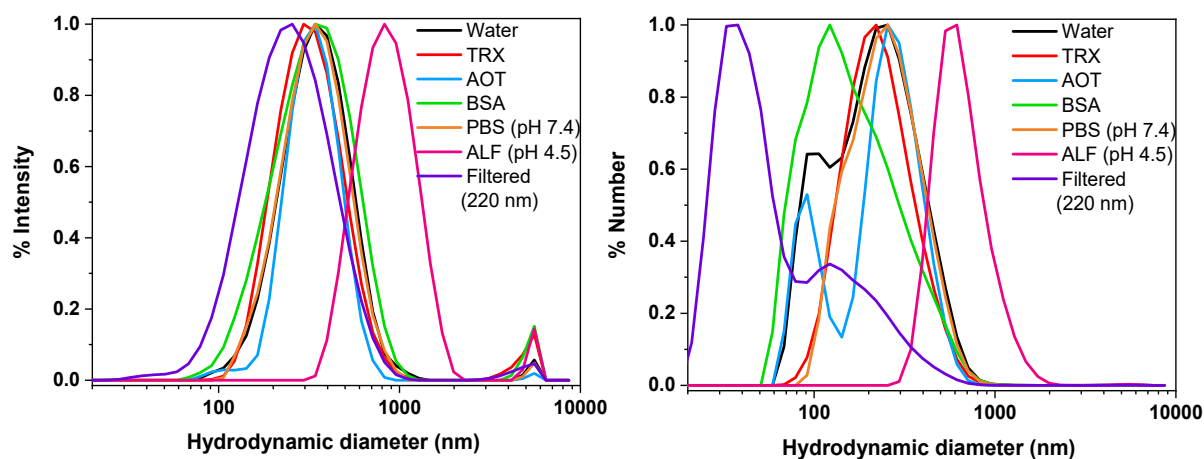


**Figure S1.** SEM micrographs of (A-B) gQ-n1, (C-D) gQ-n2, (E-F) gQ-n3 at various magnification (reported on the micrographs).

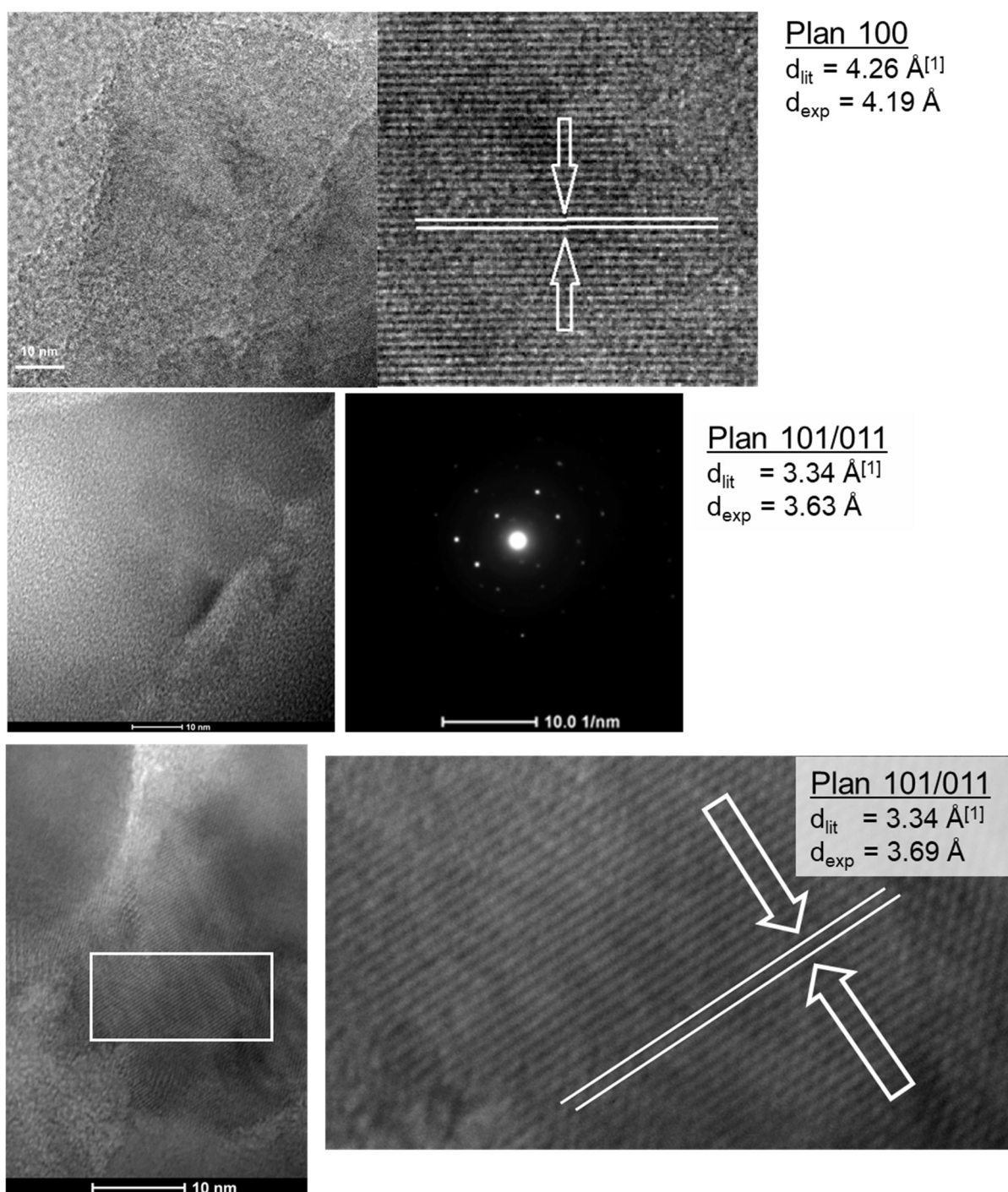
## gQ-n1



## gQ-n2



**Figure S2.** Hydrodynamic size reported in intensity-distribution and number-distribution of gQ-n1 and gQ-n2 measured by DLS analysis. Particles were dispersed in water and in different biologically relevant media, i.e., Triton X (TRX), dioctyl sulfosuccinate sodium salt (AOT), bovine serum albumin (BSA), phosphate buffered saline (PBS, 10 mM, pH 7.4), artificial phagolysosome fluid (ALF, pH 4.5), and filtered through 200-nm pore size filter.



**Figure S3:** Elaboration of TEM data and individuation of the crystal planes of gQ-n3.

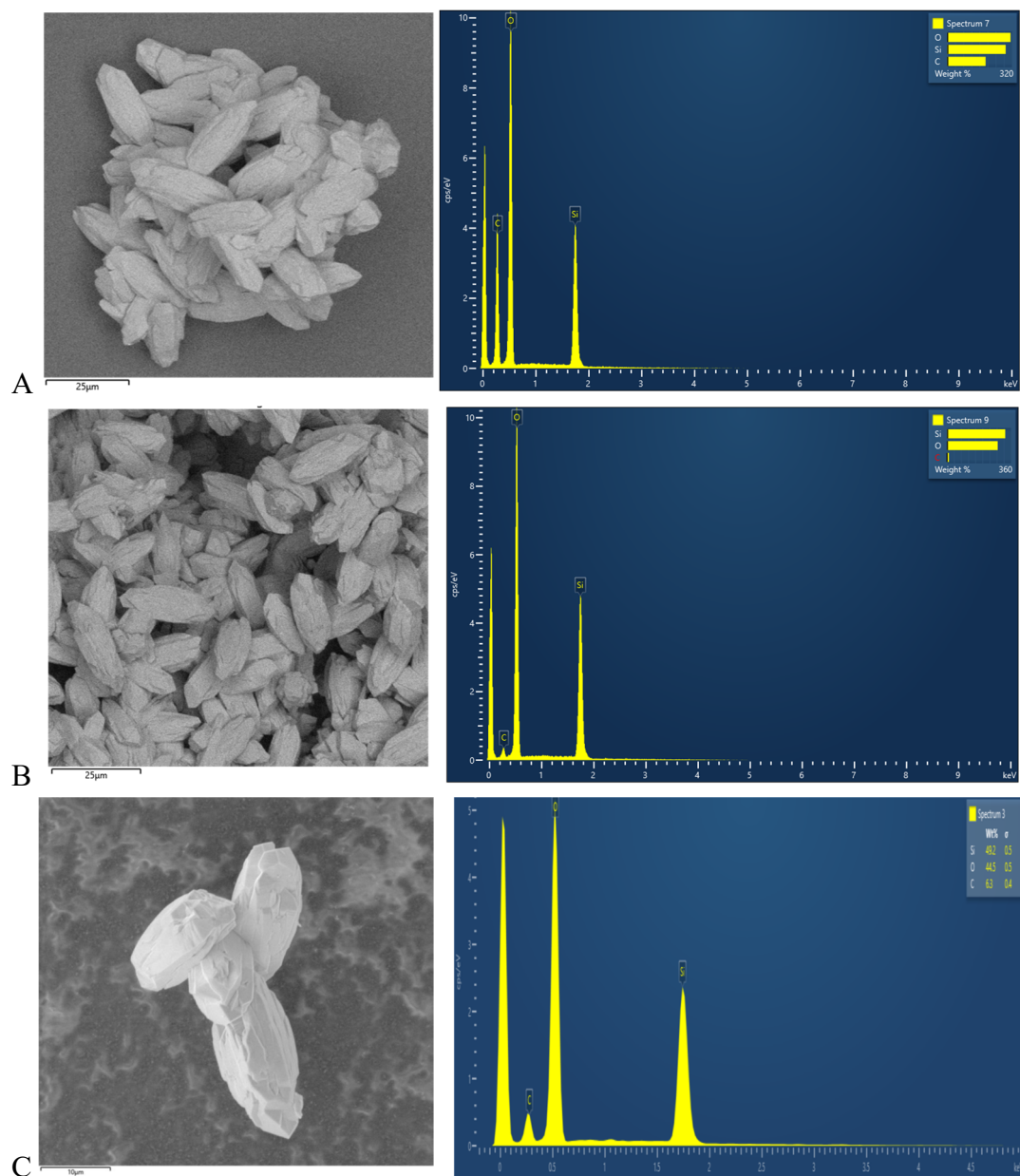


Figure S4: SEM-EDS images (BSE electrons) analysis of some batches of the synthesized gQ samples. In all cases, only Si and O were detected. The presence of C is due to the SEM conductive tape.

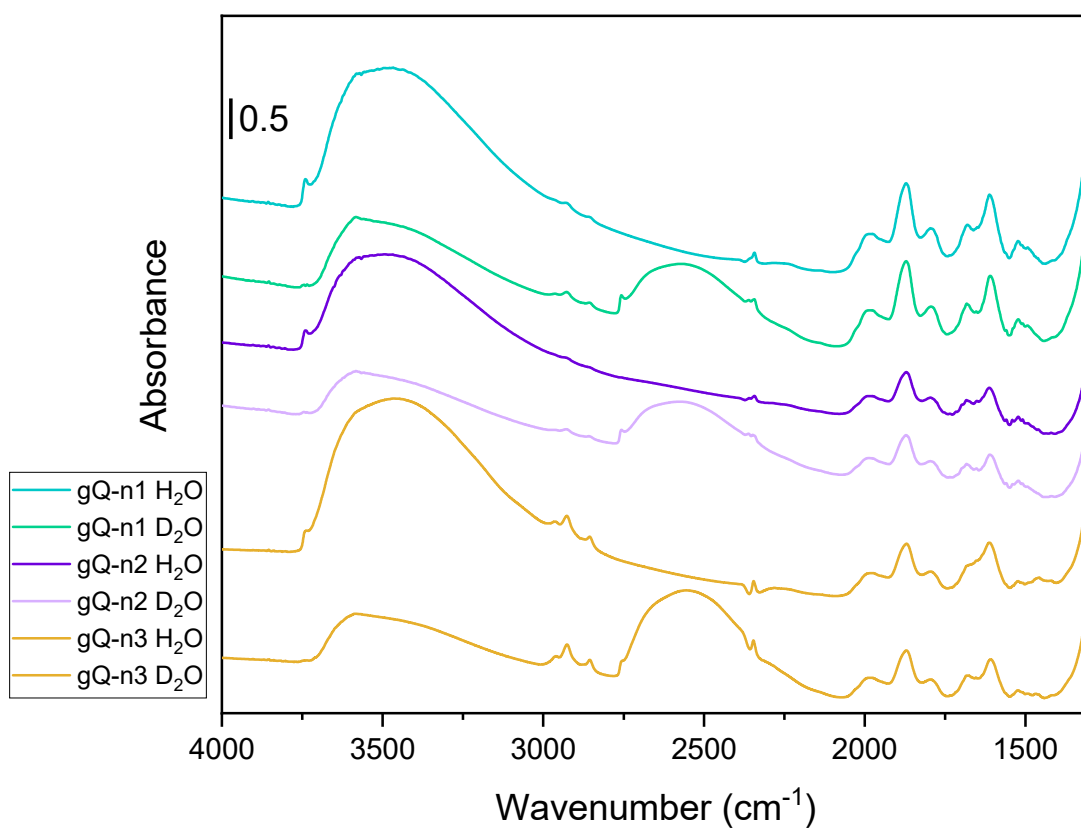


Figure S5: Full range IR spectra of gQ-n1, n2, and n3 before and after  $\text{D}_2\text{O}$  exchange.