polymers

MDPI

Optimizing the circulating tumor cells' capture efficiency of magnetic nanogels by transferrin decoration

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Supplementary Information

Bare MNPs characterization

The MNPs were characterized by IR spectroscopy and TEM. Respective data is enclosed in **Figure S1**.

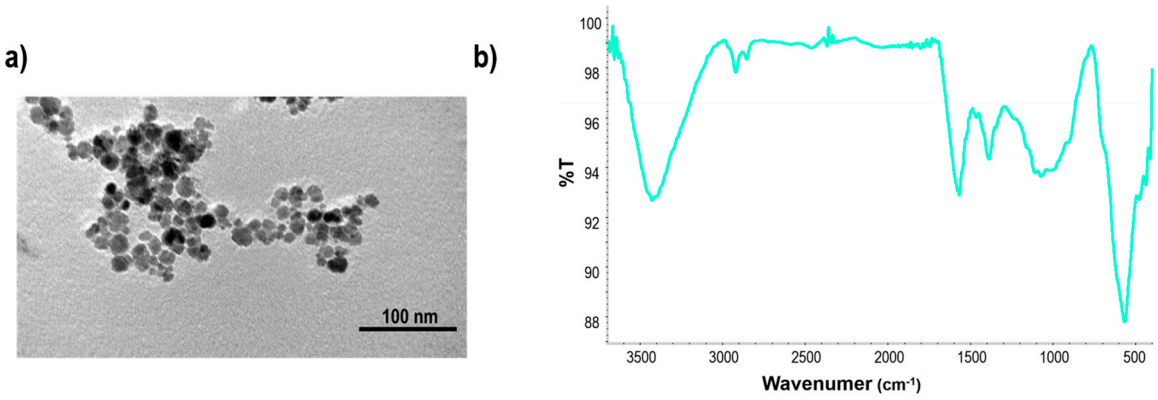

Figure S1. (a) TEM images and (b) FT-IR of MNPs.

APTES modification of MNP with an ultrasonic horn approach (MNP@APTES)

MNP@APTES were examined by IR spectroscopy and TEM. Respective data is included in **Figure S2**.

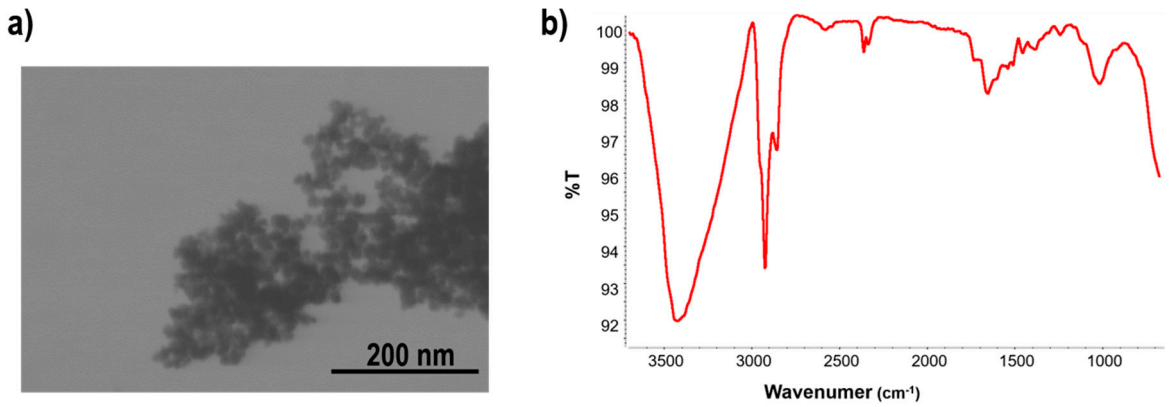

Figure S2. (a) TEM image and (b) FT-IR of MNP@APTES.

MNP@BCN characterization

MNPs decorated with BCN moieties were assessed by IR spectroscopy and TEM. Respective data is shown in **Figure S3**.

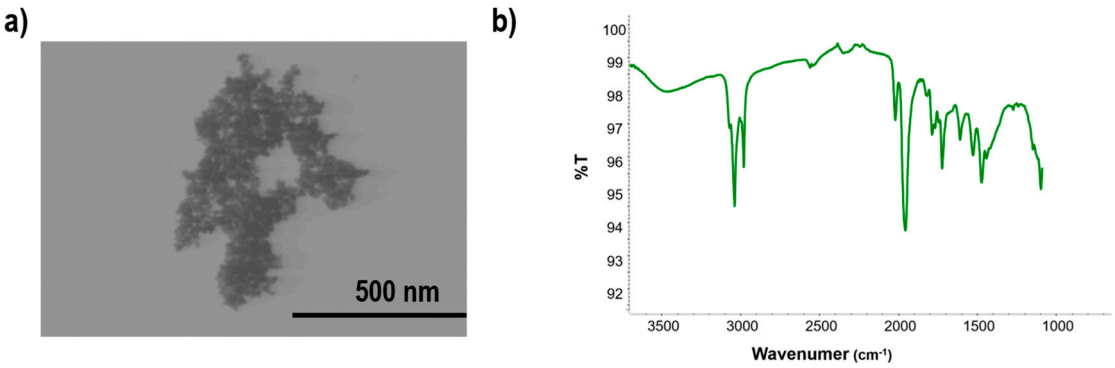

Figure S3. (a) TEM image and (b) FT-IR of MNP@BCN.

Transferrin PEG linker conjugation (Tf-PEG$_x$-N$_3$).

To study the conjugation efficiency of the N$_3$-PEG$_x$-NHS linker to transferrin, three N$_3$-PEG$_x$-NHSs were employed with different chain lengths of 4, 8, and 12. The characterization was performed by MALDI-TOF MS, CD, and ^{1}H NMR, as shown in **Figures S4 - S7**.

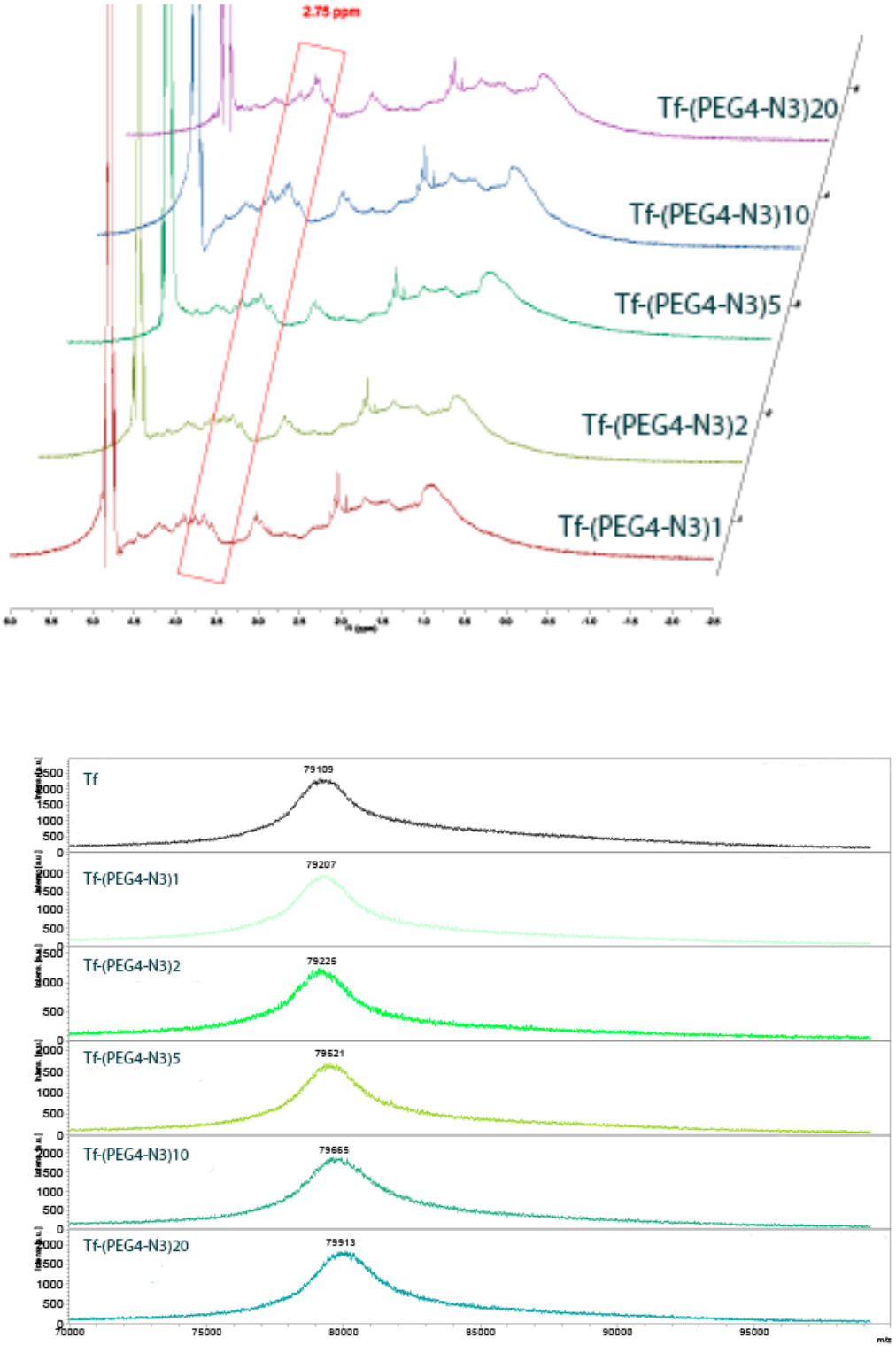

Figure S4. ^{1}H-NMR (top) and MALDI-TOF (bottom) spectra of Tf-PEG$_4$-N$_3$ conjugates in the following molar feed Tf to PEG linker ratios from up to bottom: 1:1, 1:2, 1:5, 1:10, and 1:20.

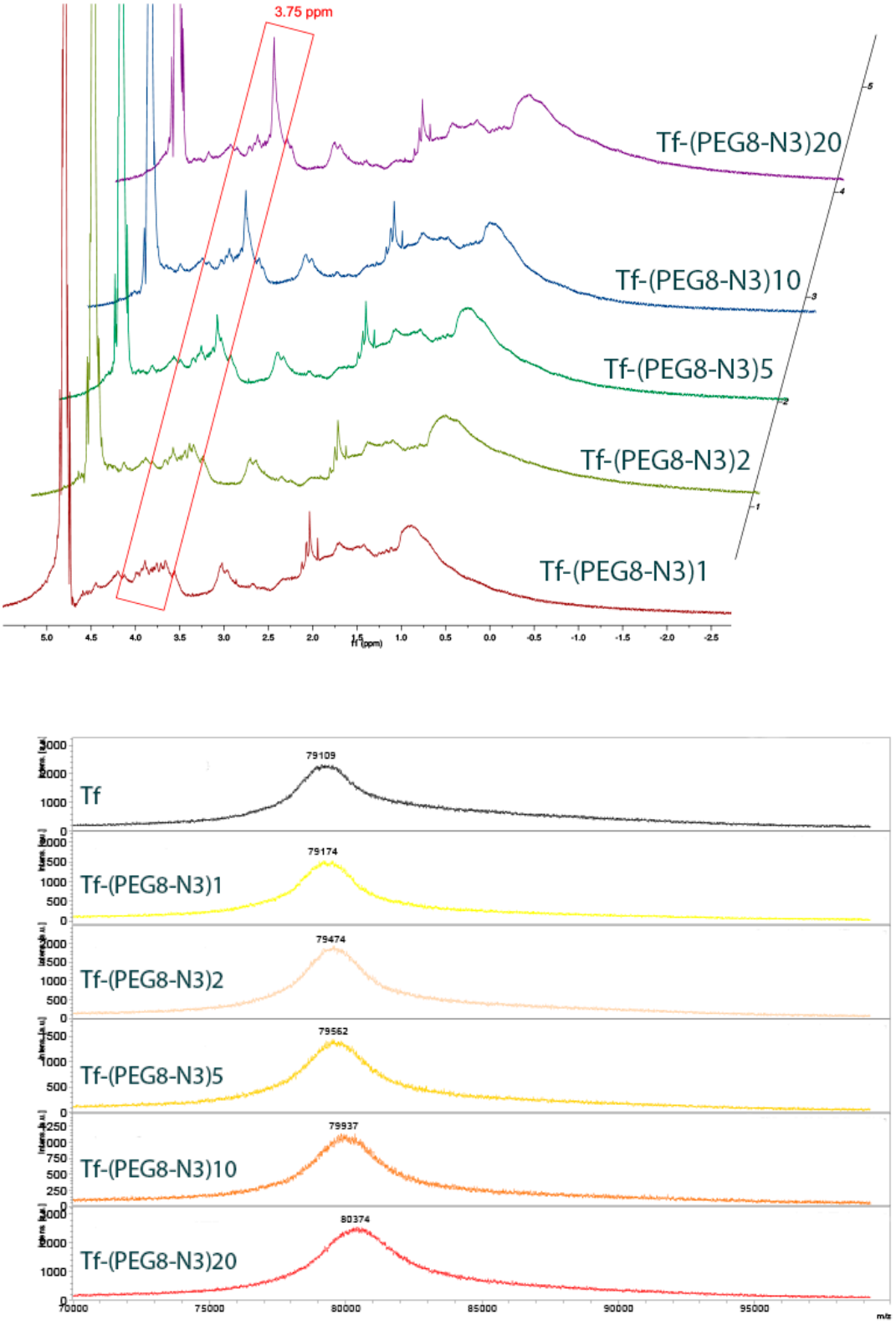

Figure S5. ^{1}H-NMR (top) and MALDI-TOF (bottom) spectra of Tf-PEG$_{8}$-N$_{3}$ conjugates in the following molar feed Tf to PEG linker ratios from up to bottom: 1:1, 1:2, 1:5, 1:10, and 1:20.

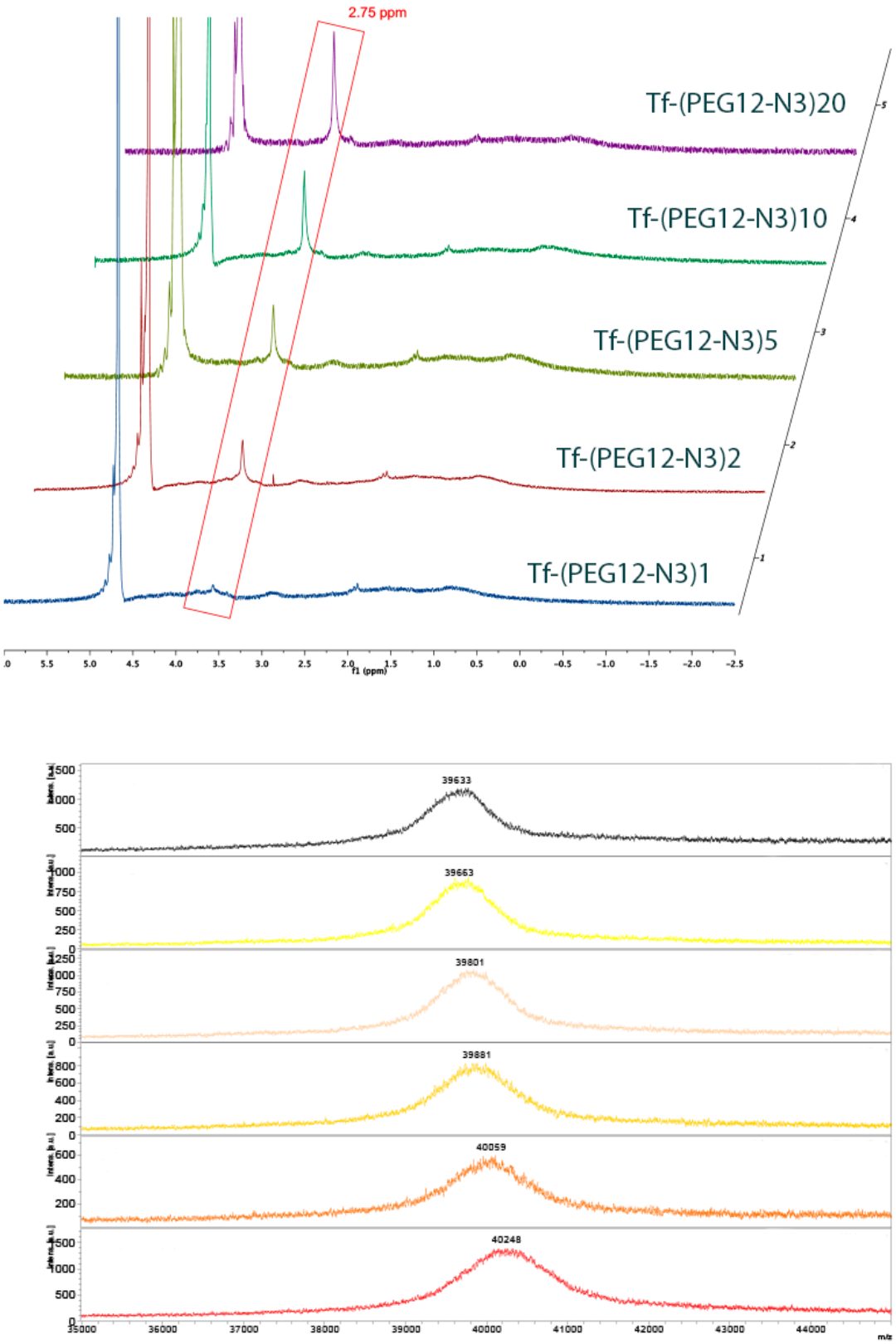

Figure S6. ^{1}H-NMR (top) and MALDI-TOF (bottom) spectra of Tf-PEG$_{12}$-N$_3$ conjugates in the following molar feed Tf to PEG linker ratios from up to bottom: 1:1, 1:2, 1:5, 1:10, and 1:20.

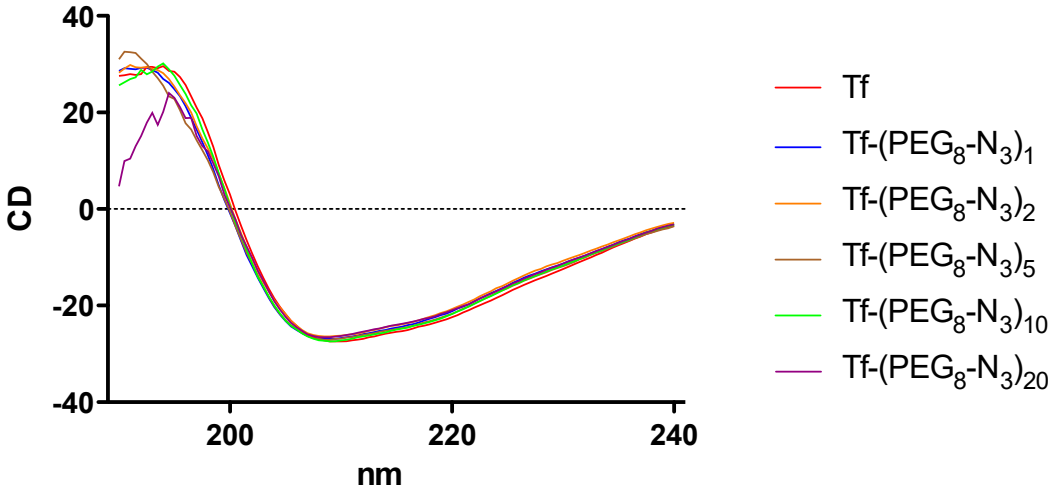

Figure S7. Circular dichroism spectroscopy of Tf-(PEG_8-N_3)$_x$ conjugates.

Nanogel characterization (MNG@Tf)

NGs were characterized by IR, NTA, SEM, and TEM. Respective data is enclosed in **Figure S8**.

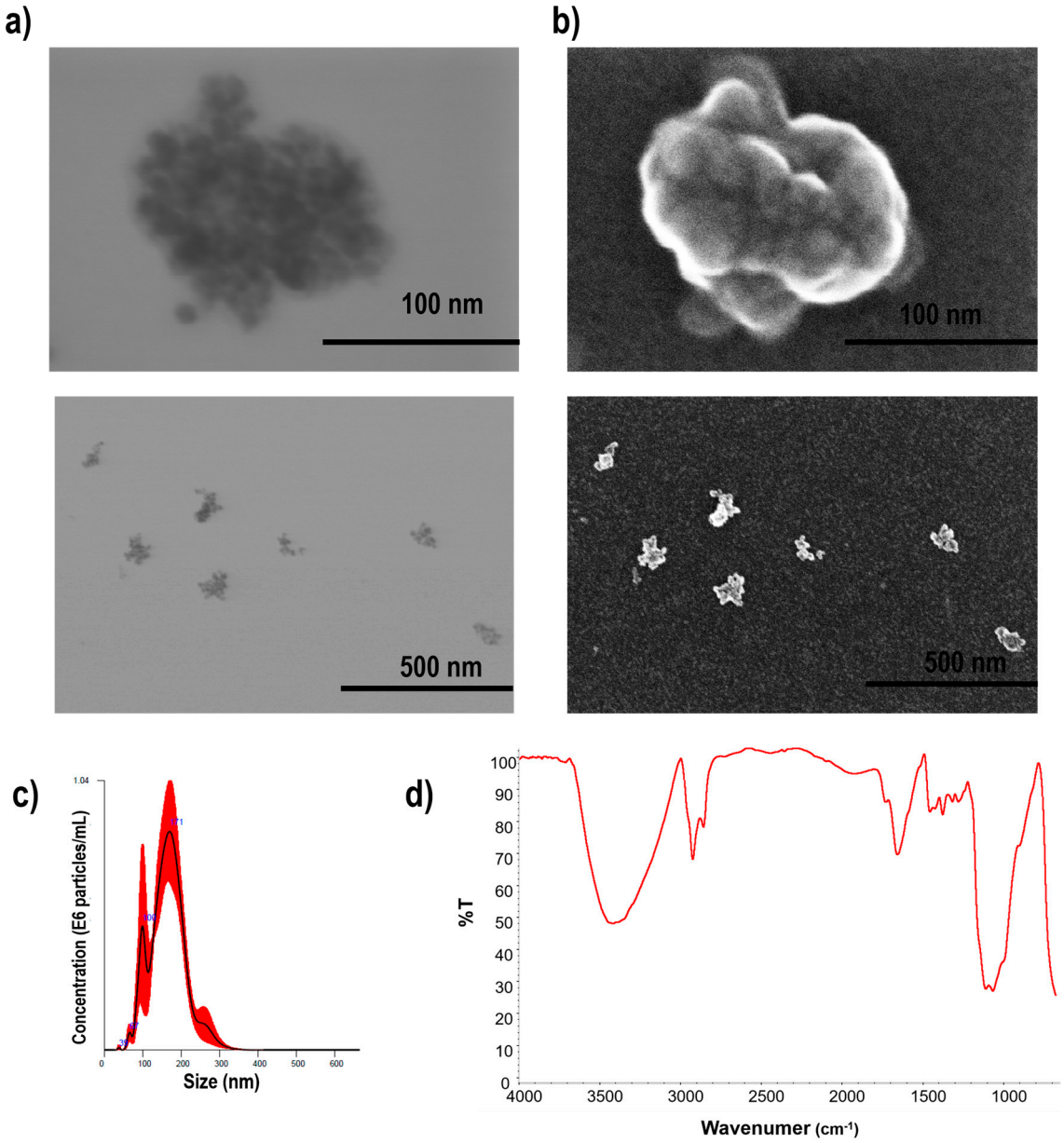

Figure S8. (a) TEM images, (b) SEM images, (c) hydrodynamic diameter distribution measured by NTA, and (d) FT-IR of MNG@Tf.