Effect of the Synthetic Approach on the Formation and Magnetic Properties of Iron-Based Nanophase in Branched Polyester Polyol Matrix

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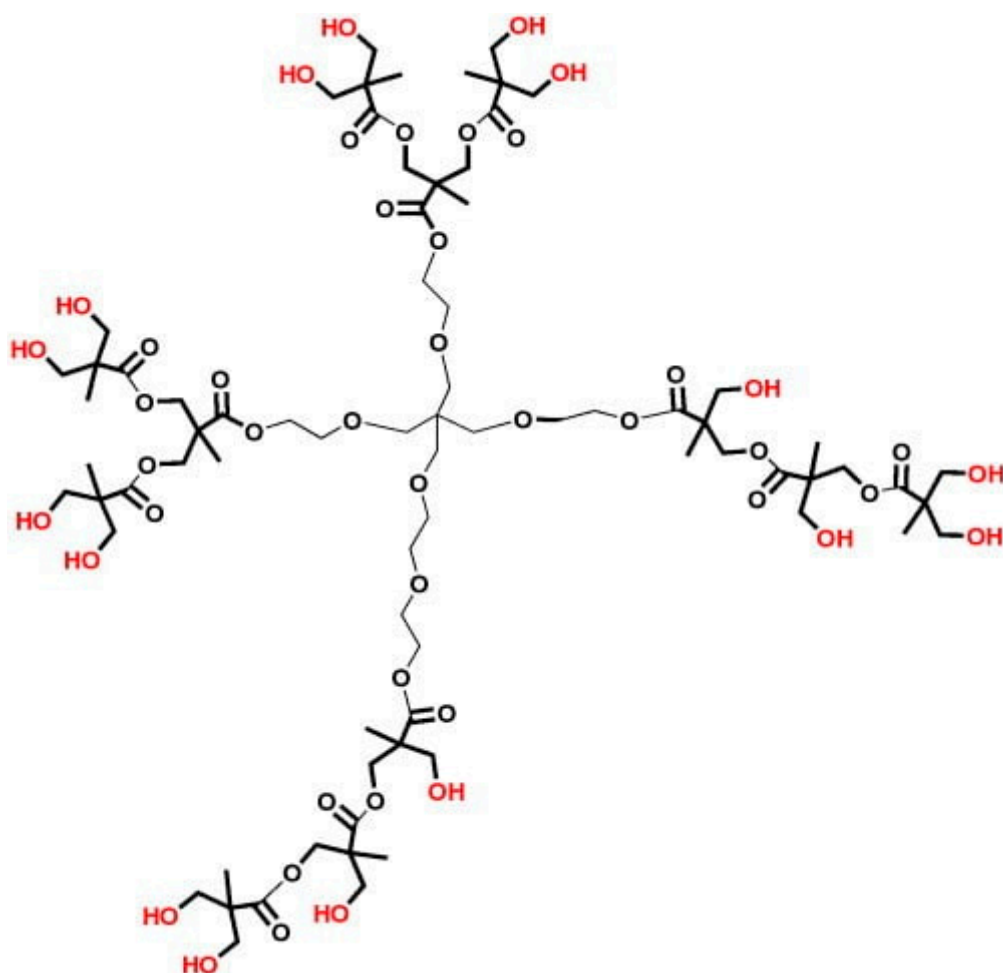* Correspondence: ajrat.kiyamov@kpfu.ru
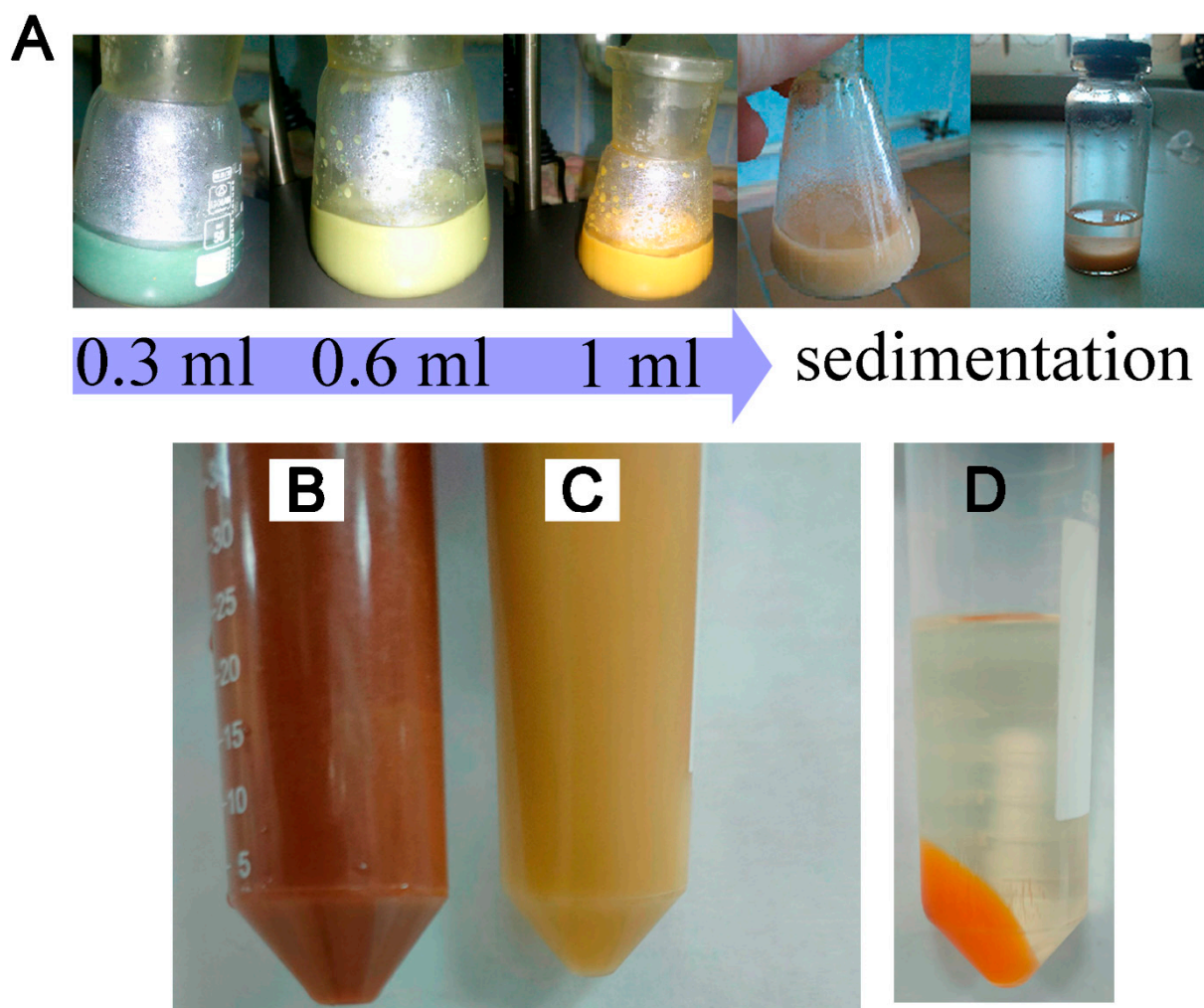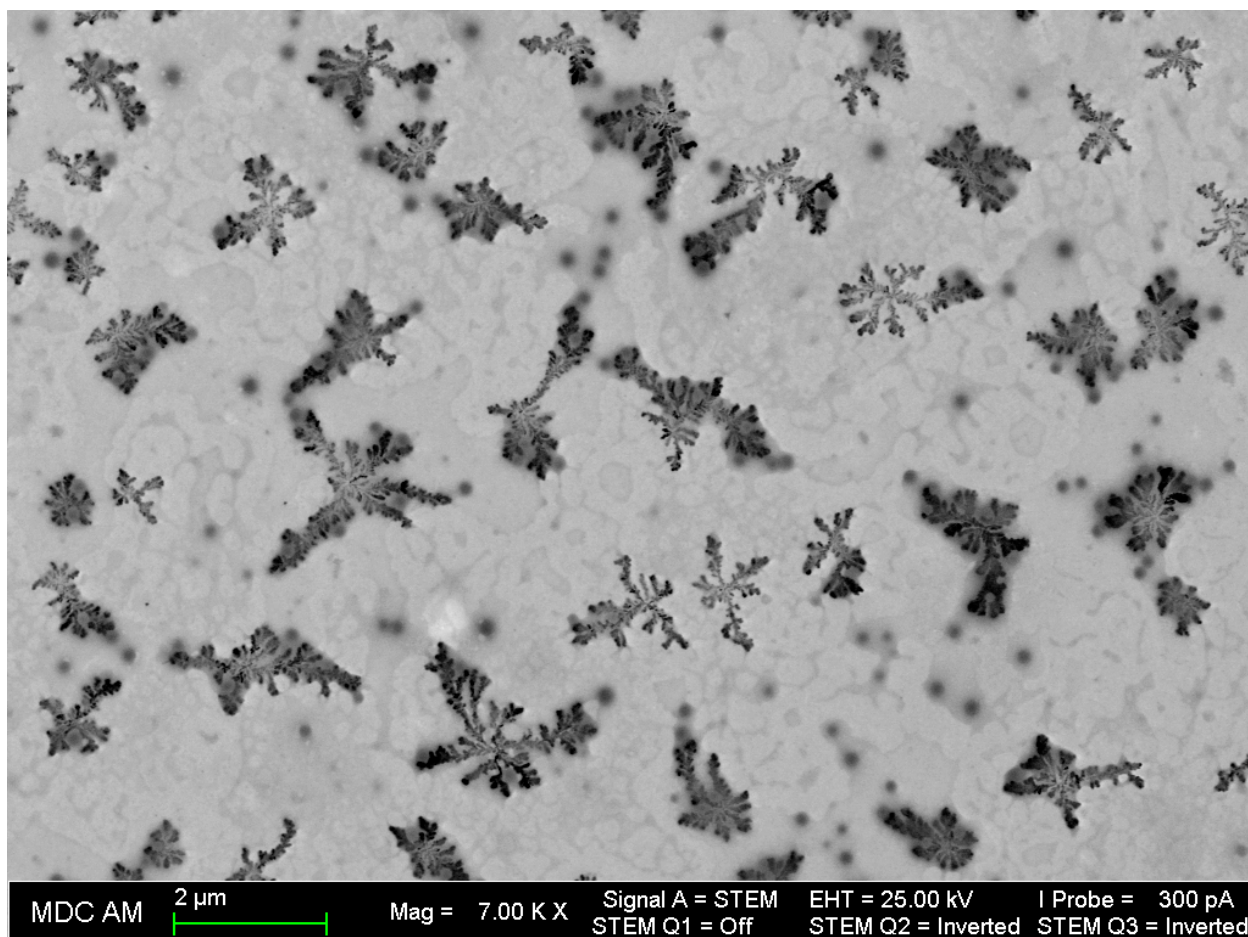
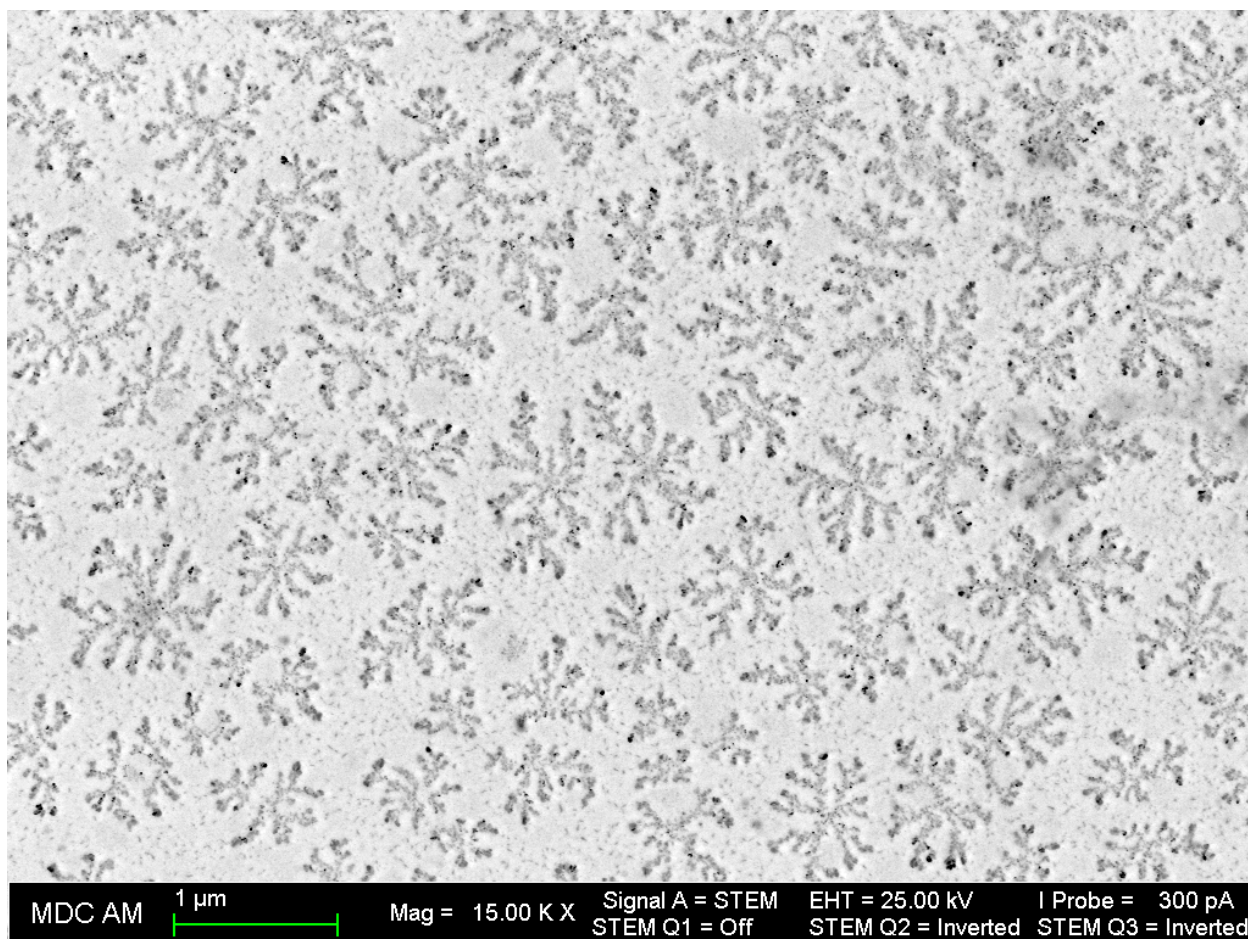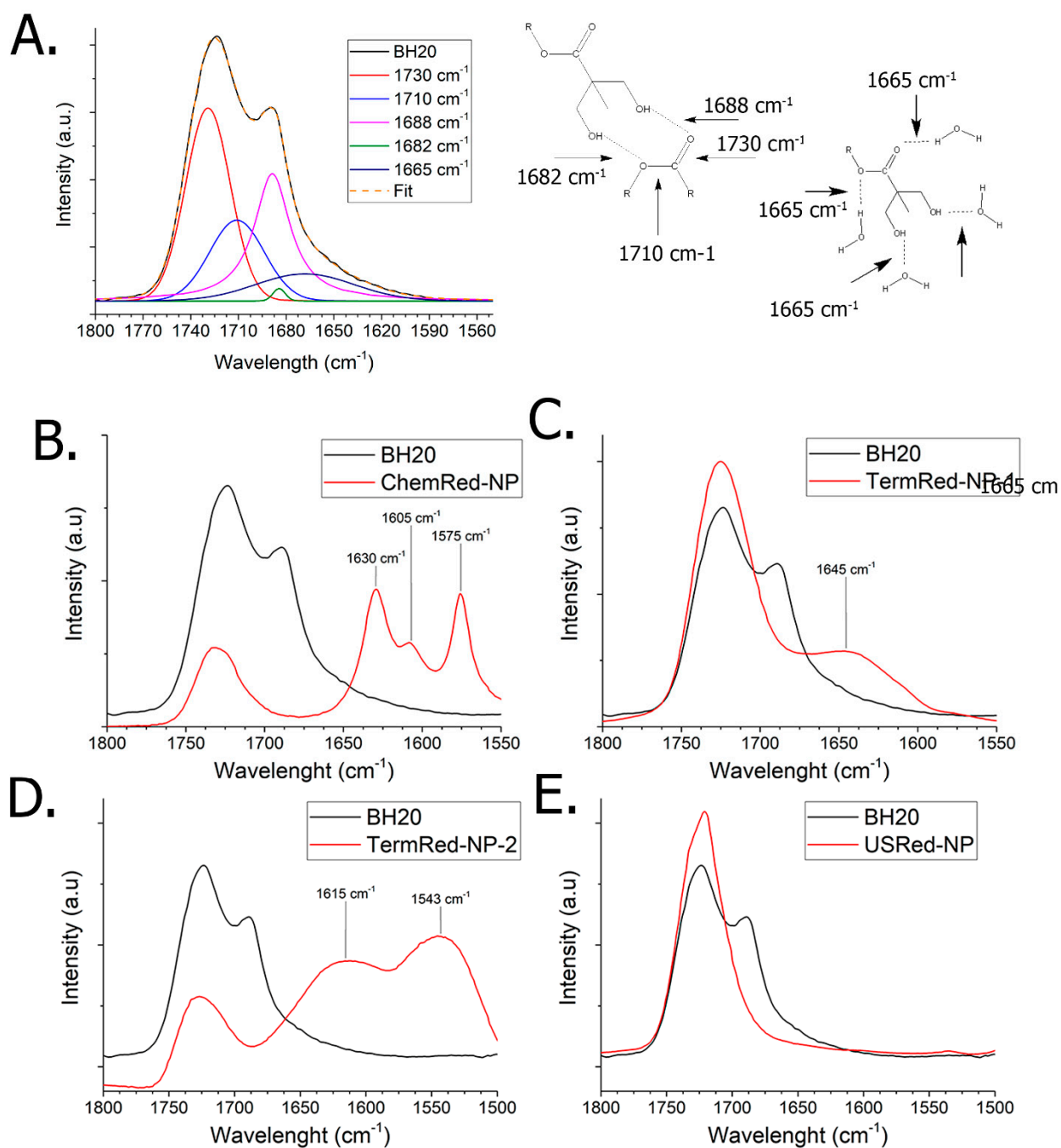Figure S1. Theoretical structure of Boltorn H20

Figure S2. A) ChemRed-NP Change in the color of solutions during the synthesis of $Fe_mO_n/H20$ nanoparticles with the addition of $N_2H_4 \times H_2O$ and color of the dispersed system containing composite $Fe_mO_n/H20$ nanoparticles at the end of the synthesis reaction; B) TermRed-NP reaction mixture during washing before centrifugation; C) US/TermRed-NP reaction mixture during washing before centrifugation;; D) US-NP after centrifugation.
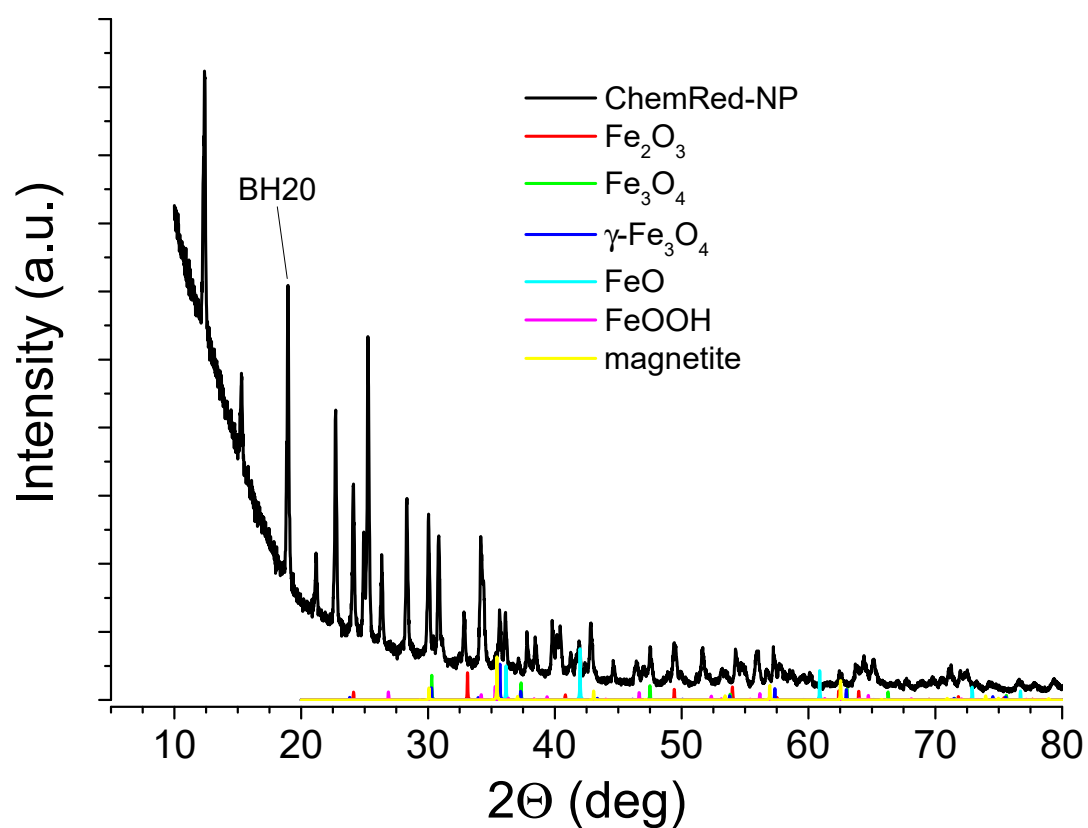
MDC AM   2 µm   Mag = 7.00 K X   Signal A = STEM   EHT = 25.00 kV   I Probe = 300 pA
STEM Q1 = Off   STEM Q2 = Inverted   STEM Q3 = Inverted

FigureS3. SEM image of US/TermRed-NP nanoparticles to confirm the statistics.

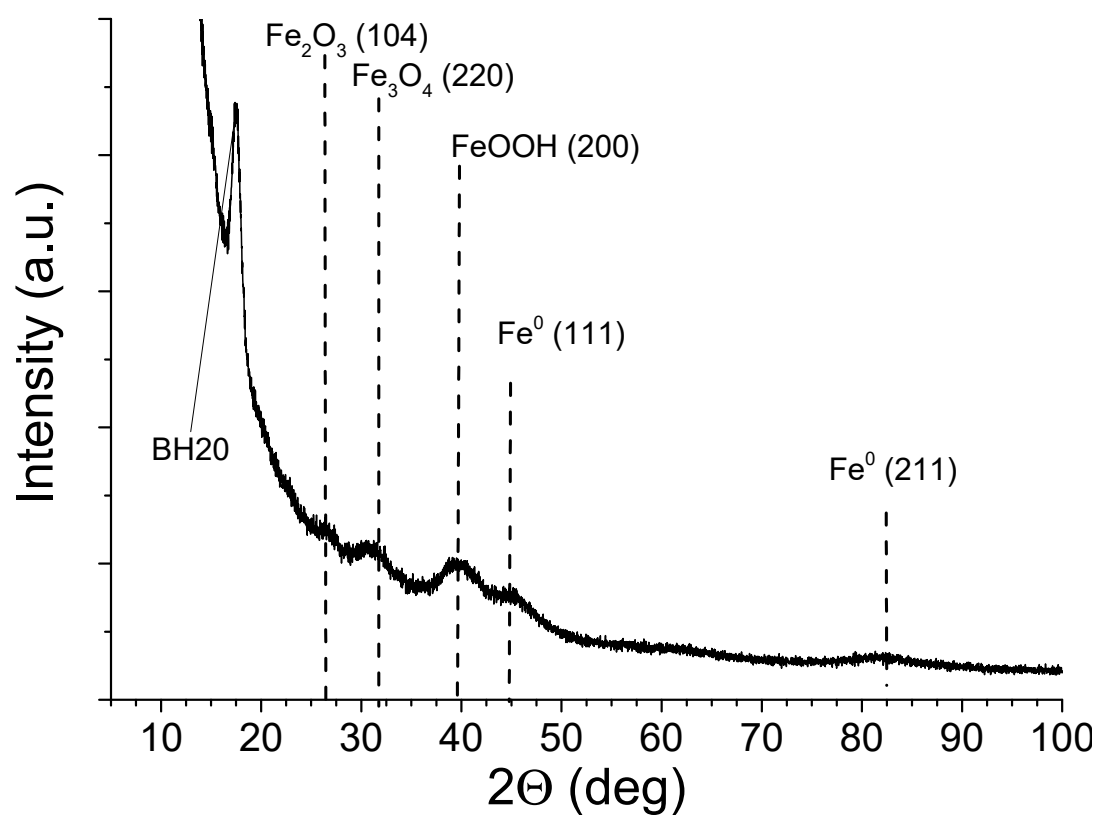| MDC AM | 1 μm | Mag = 15.00 K X | Signal A = STEM
STEM Q1 = Off | EHT = 25.00 kV
STEM Q2 = Inverted | I Probe = 300 pA
STEM Q3 = Inverted |

FigureS4. SEM image of US-NP nanoparticles to confirm the statistics.
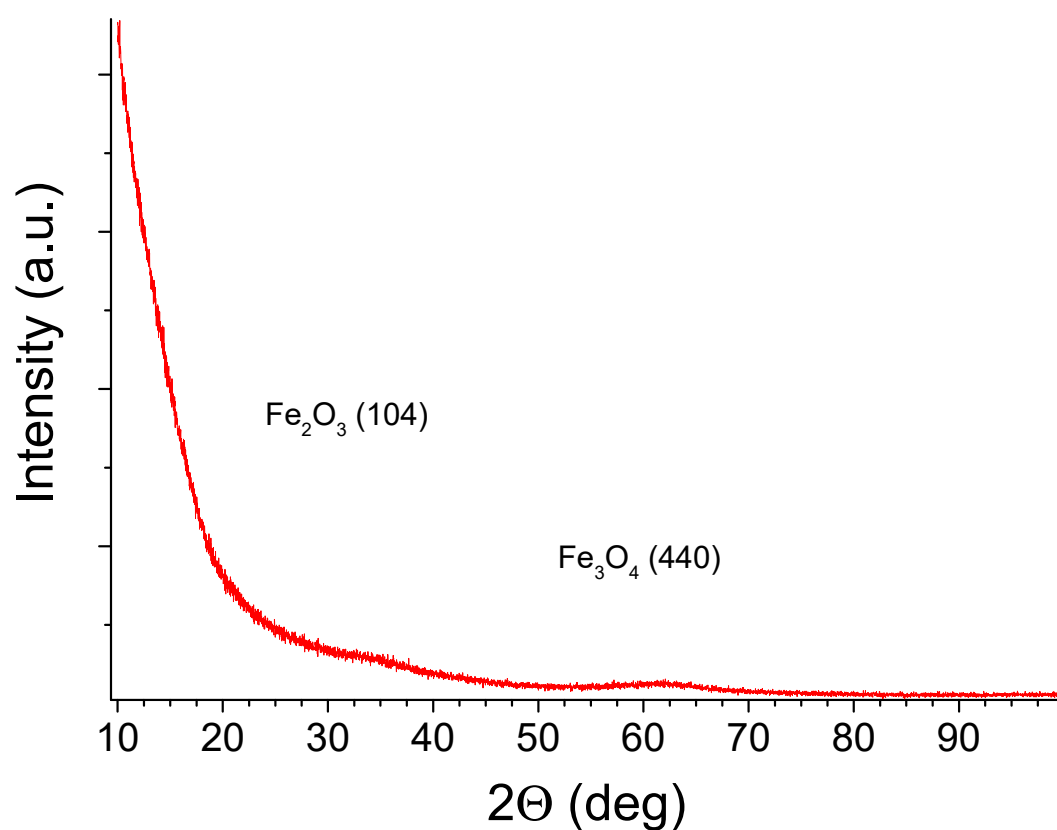
FigureS5. Ft-IR spectra: A) BH20; B) ChemRed-NP; C) TermRed-NP; D) US/TermRed-NP; E) US-NP.

FigureS6 Full XRD spectra of **ChemRed-NP**.

FigureS7 Full XRD spectra of **US-NP**.

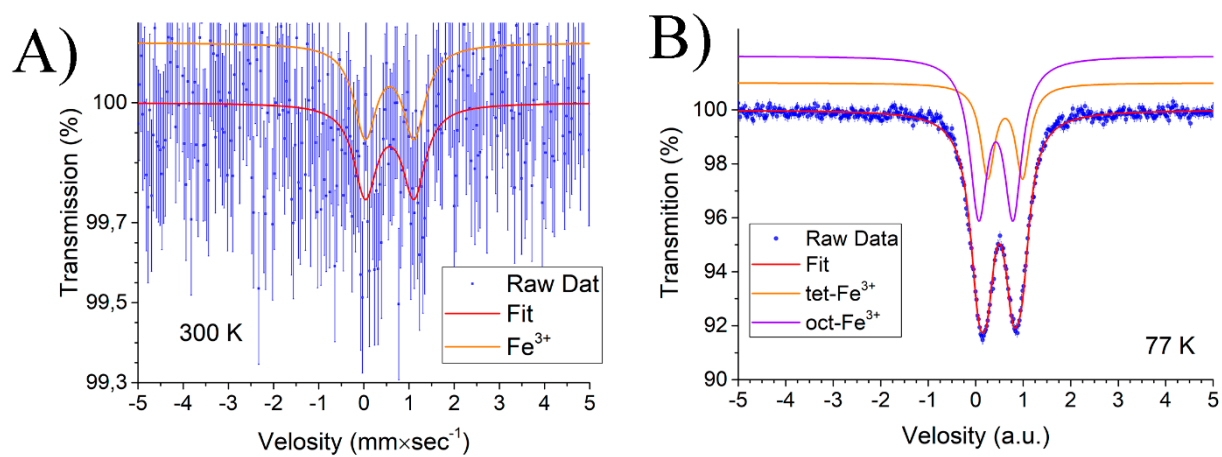FigureS8. Full XRD spectra of **US/TermRed**.

Figure S9 Mossbauer spectra of US/TermRed-NP with deconvolution: A) at 300 K; B) at 77 K.
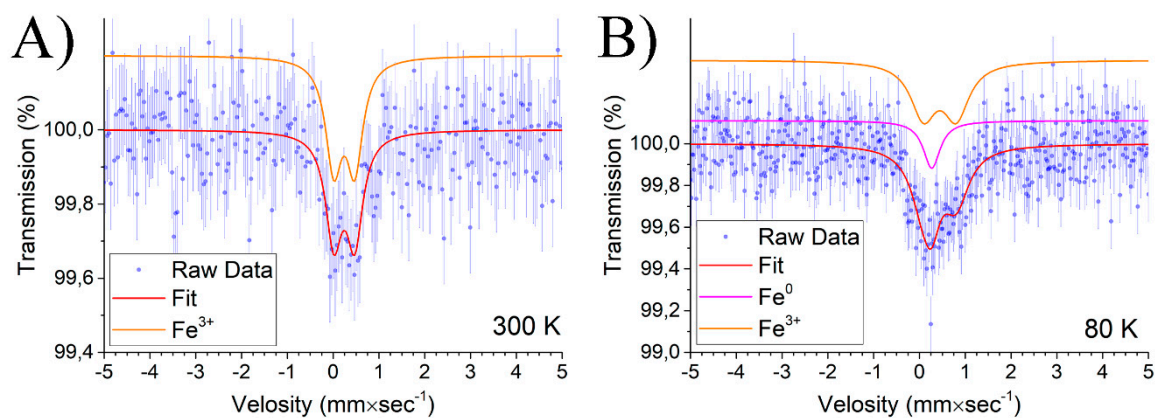
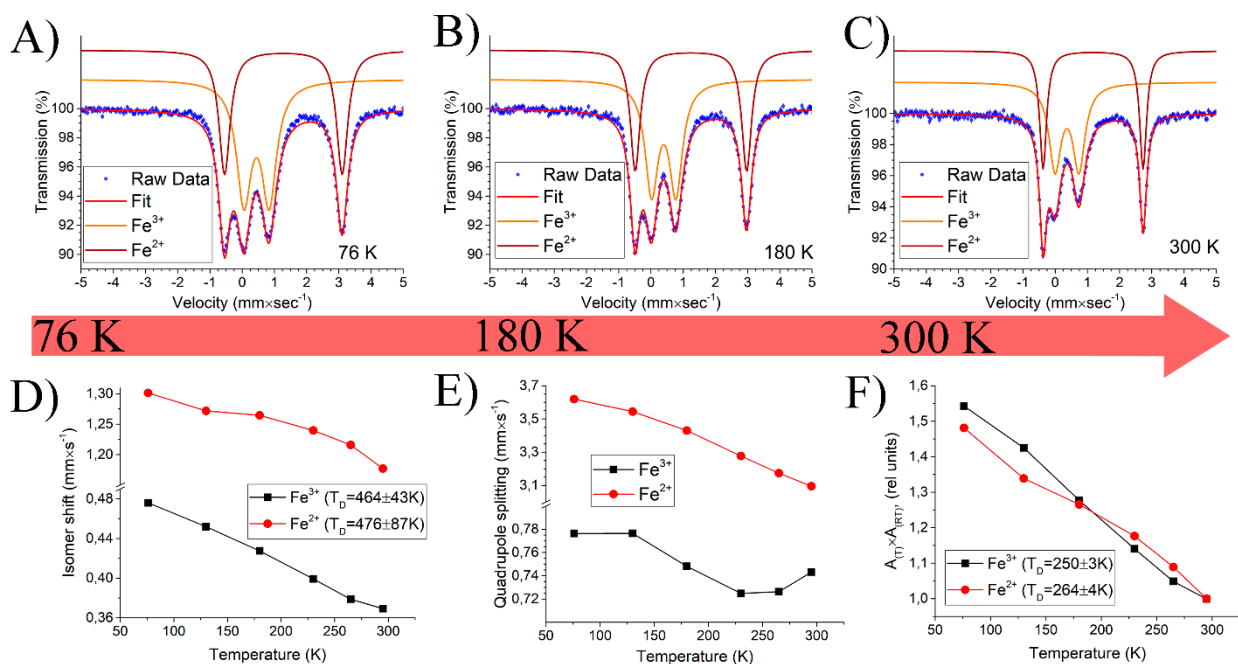Figure S10 Mossbauer spectra of US-NP with deconvolution: A) at 300 K; B) at 80 K.

Figure S11 Mossbauer spectra of ChemRed-NP with deconvolution: A) at 76 K; B) at 180 K; C) at 300 K ; D) Isomer shifts at different temperatures; E) quadrupole splitting; F) Thermal deposition of ChemRed-NP
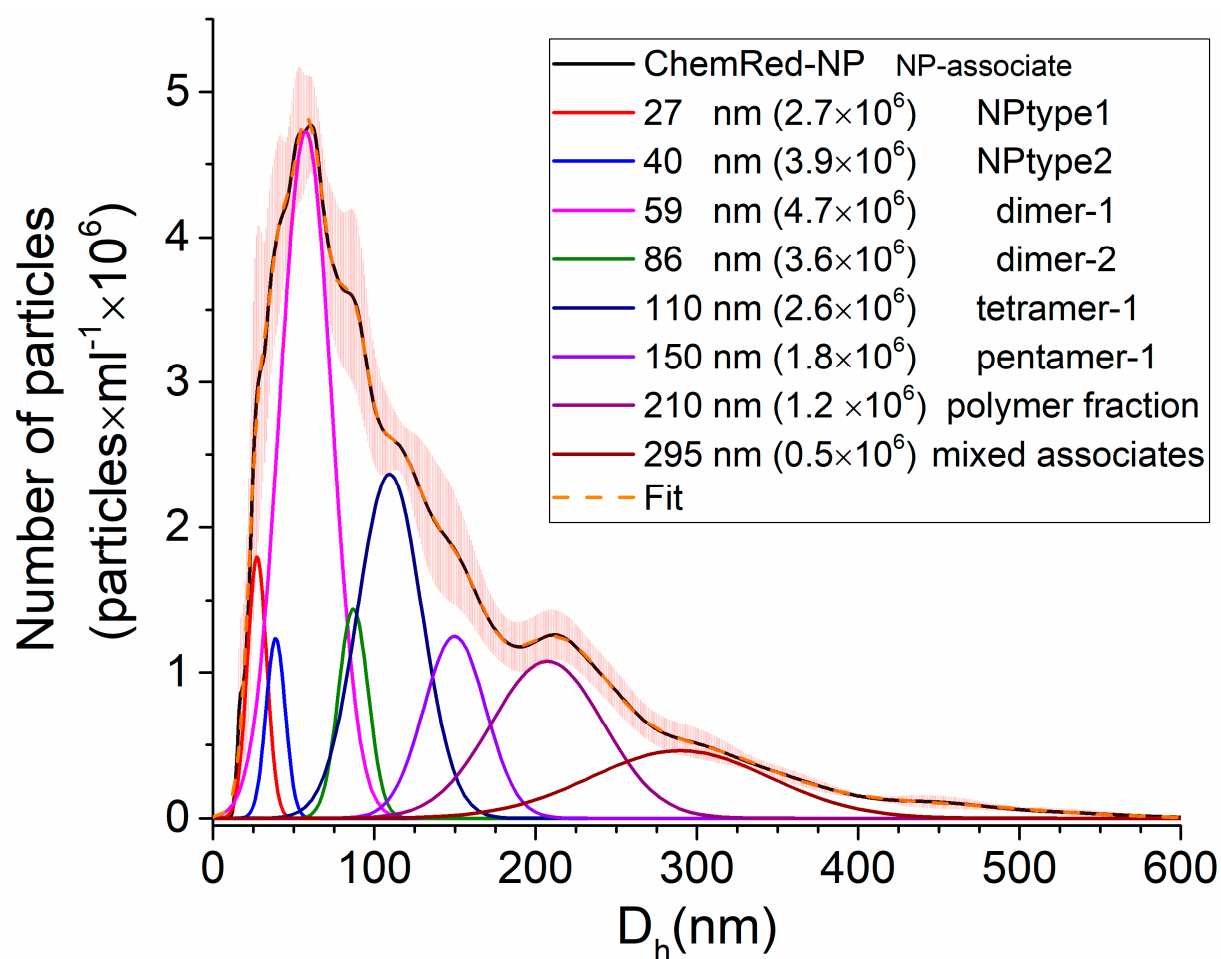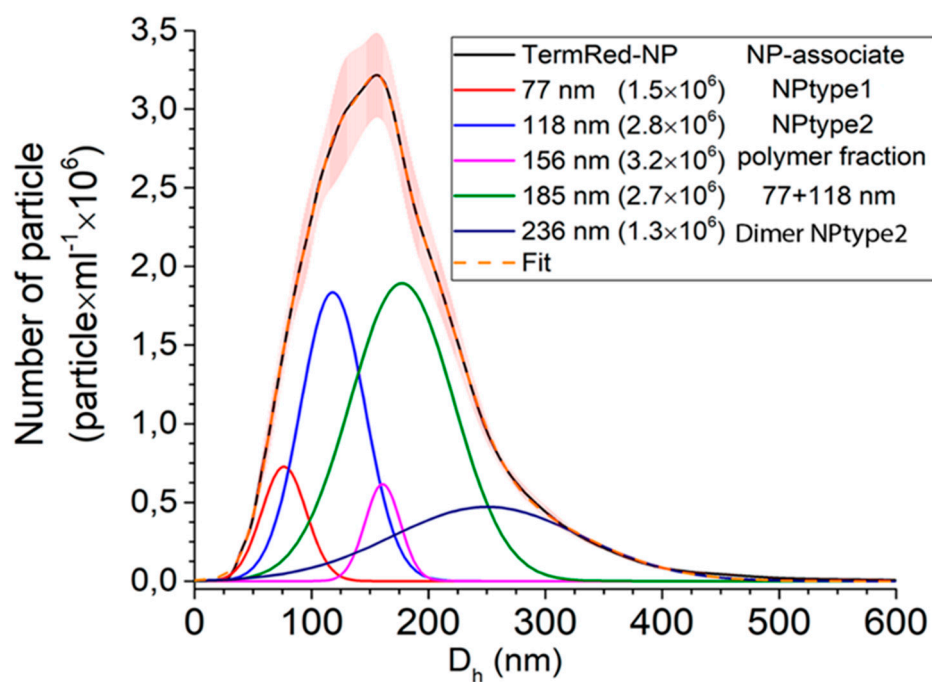
Figuere S12. NTA analysis ChemRed-NP
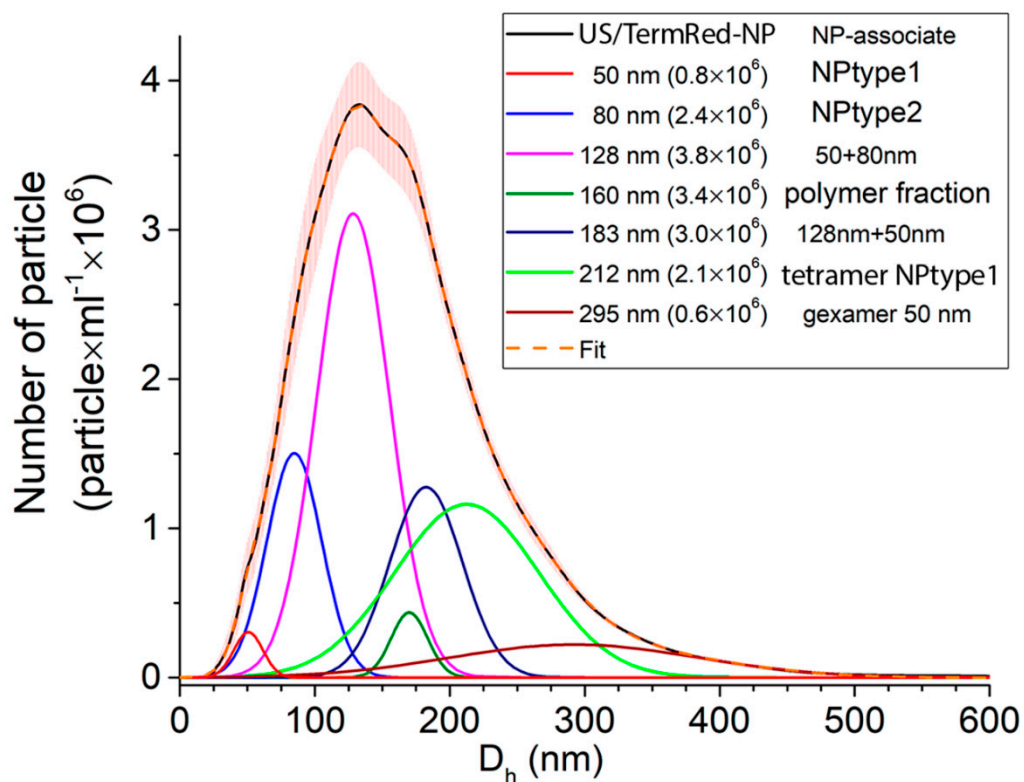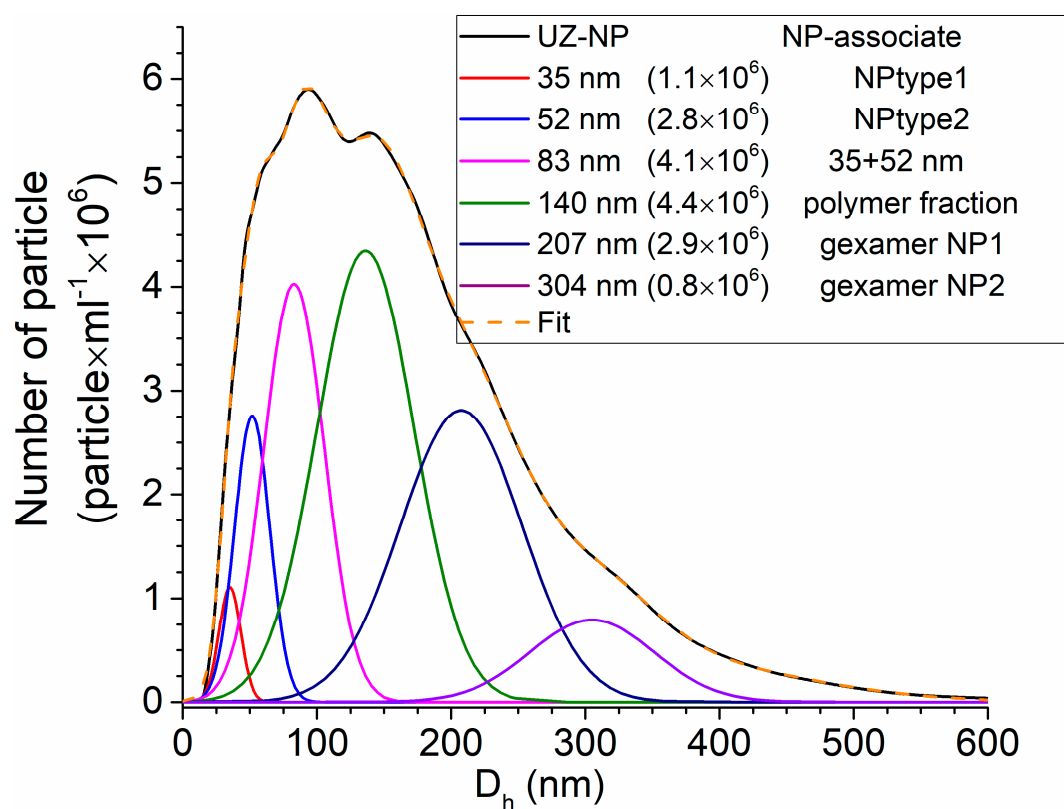

Figure S13. NTA analysis TermRed-NP

Figure S14. NTA analysis US/TermRed-NP

Figure S15. NTA analysis US-NP.