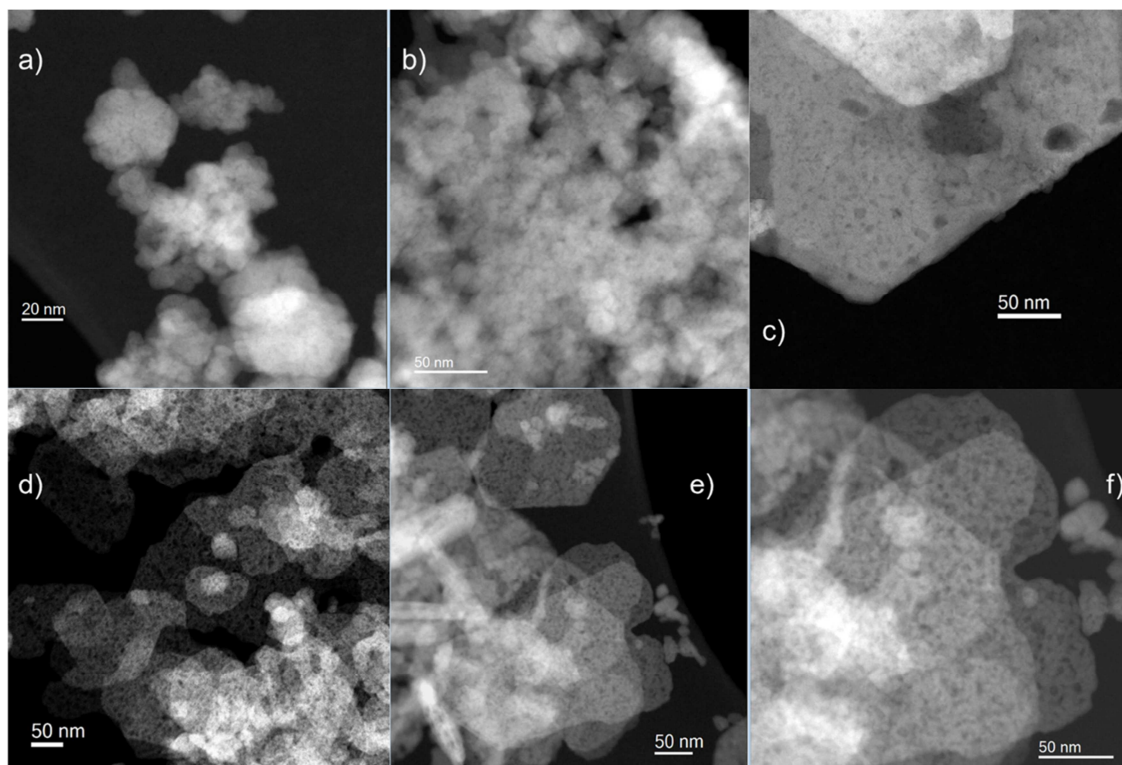
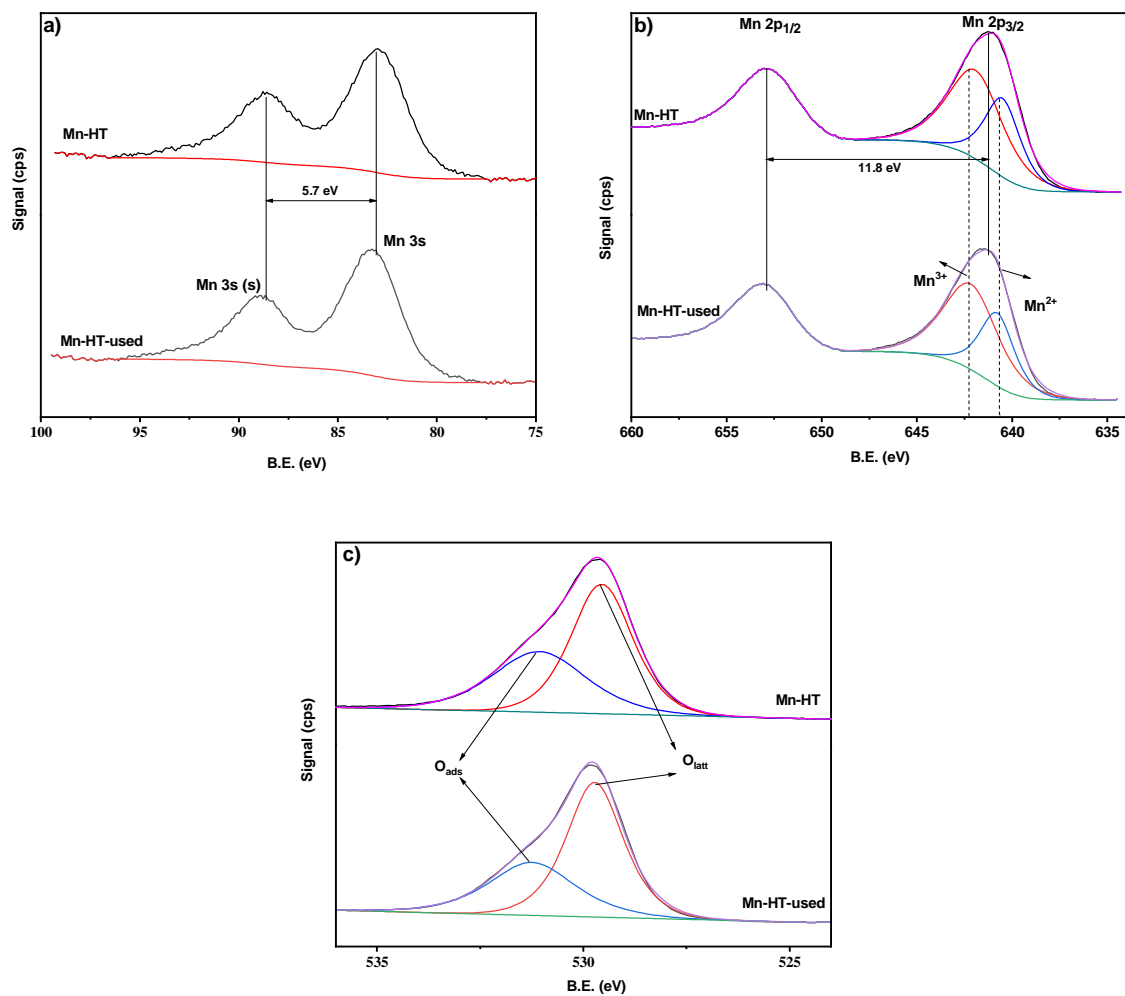


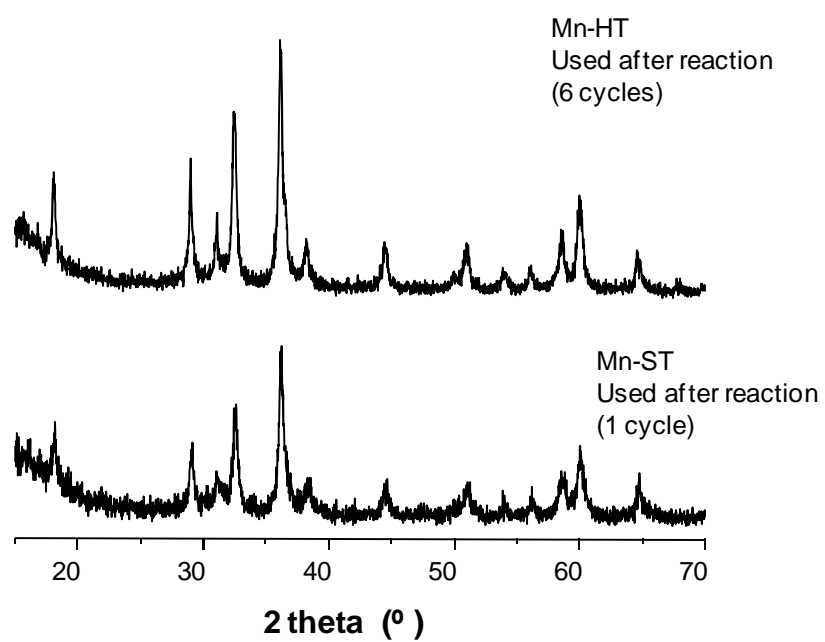
Supporting information



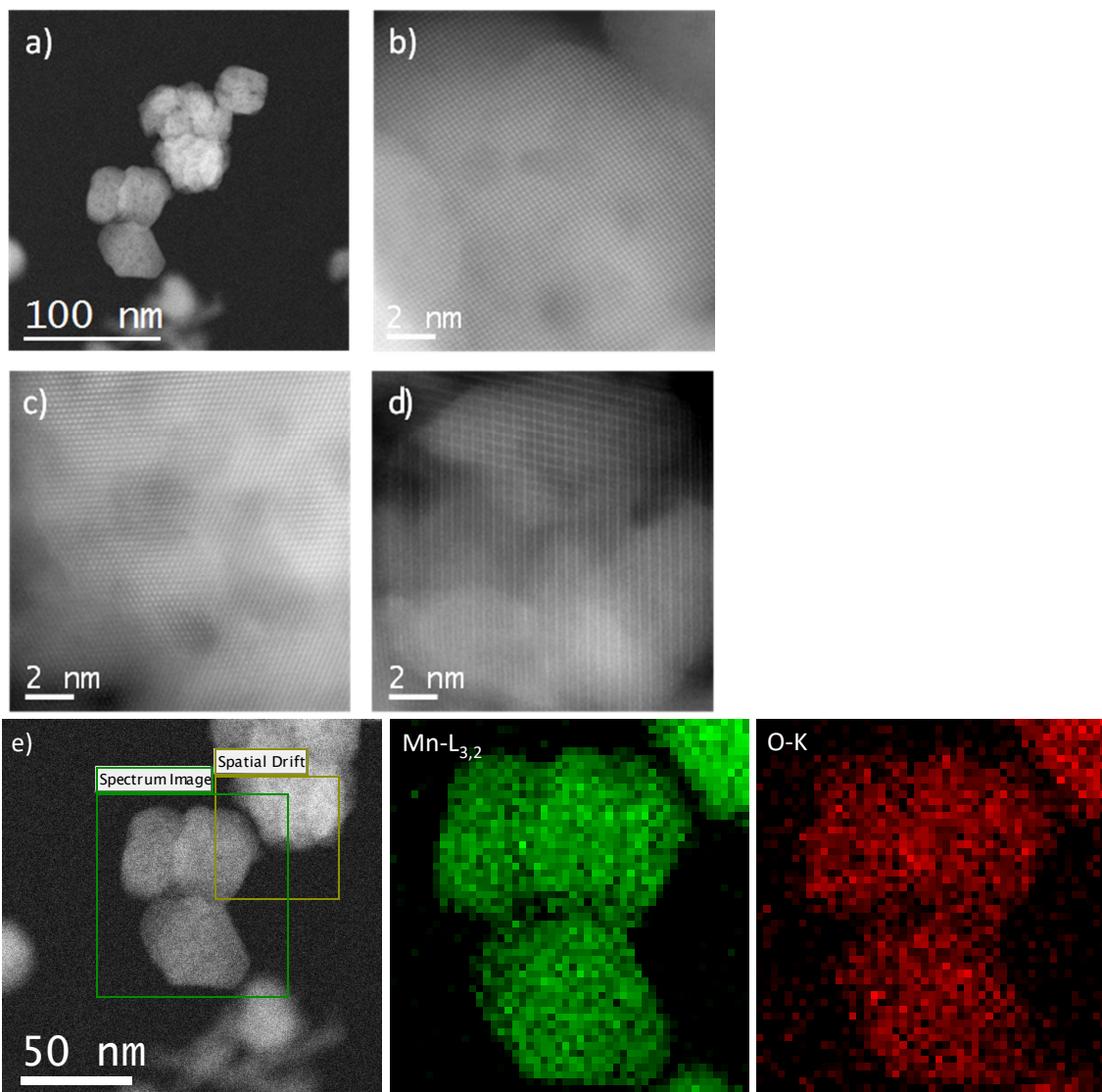
**Figure S1.** a) to f) Low Magnification micrographs of Mn-ST and Mn-HT nanoparticles, a), b) & c) Mn-ST and d), e) & f) Mn-HT, respectively.



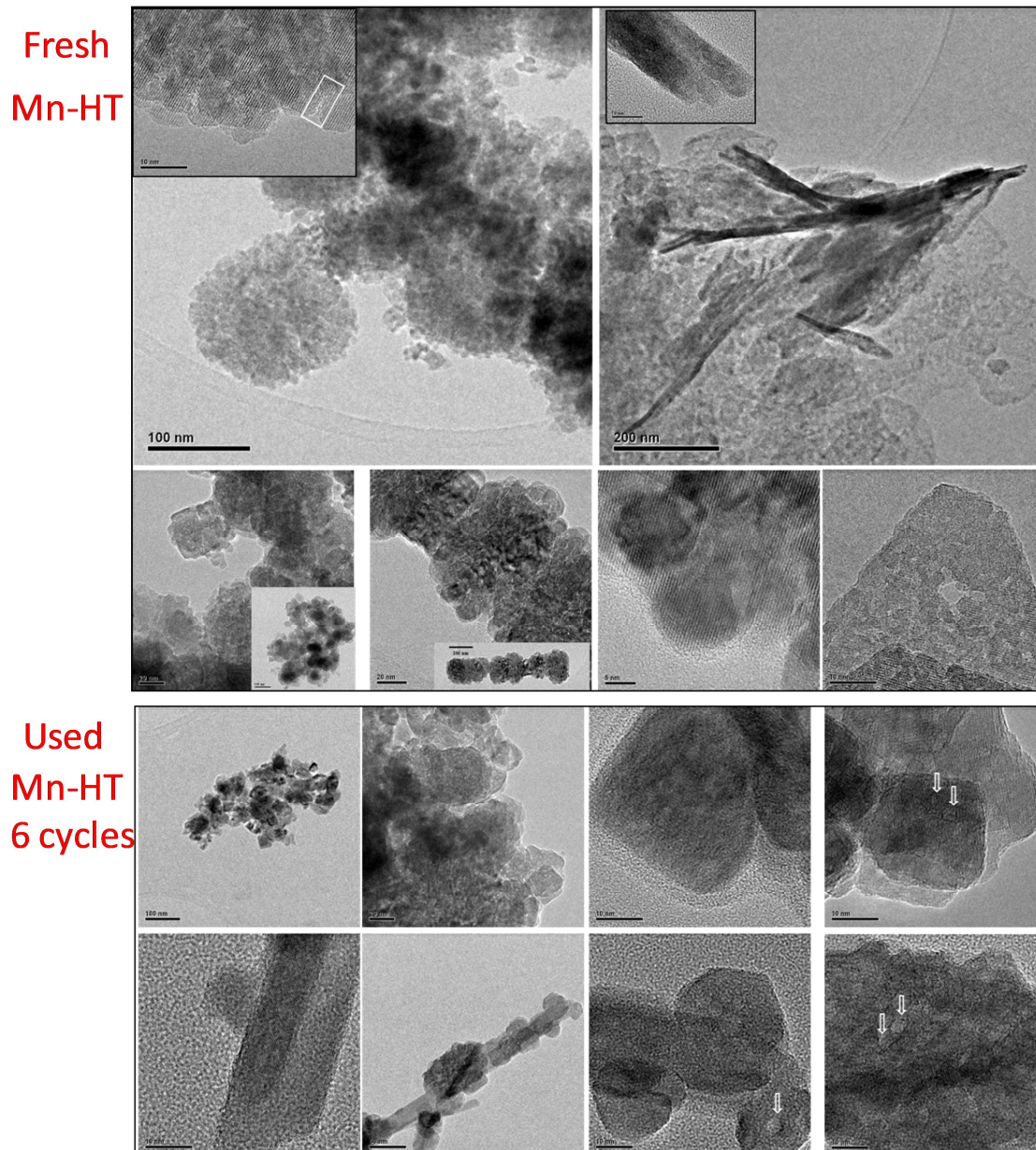
**Figure S2. XPS spectra of the (a) Mn 3s region, (b) Mn 2p region and (c) O 1s region of the Mn-HT fresh and used catalysts.**



**Figure S3. XRD of Mn-HT catalyst and Mn-ST catalysts after reaction tests.**



**Figure S4.** Cs-corrected STEM-HAADF images of the Mn-HT material after reaction. a) Low-magnification image of different nanoparticles. b), c) and d) High-resolution information presenting various nanoparticles along different zone axes. e) Spectrum image together with the extracted chemical maps Mn in green and O in red.



**Figure S5. TEM images of fresh and used in reaction Mn-HT catalyst.**

