Supporting Information Document

Control of Size and Composition of Colloidal Nanocrystals of Manganese Oxide

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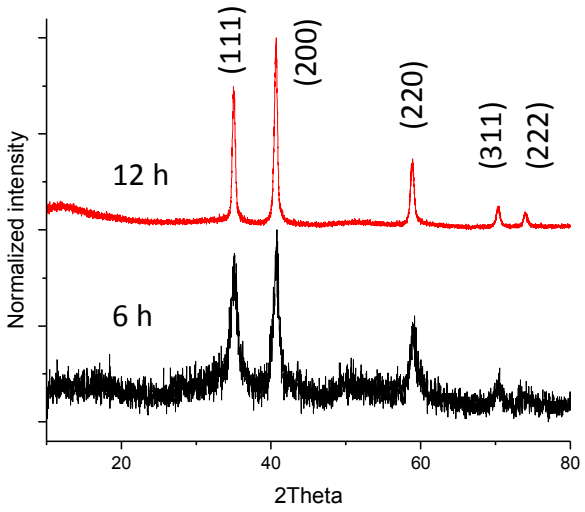

Figure S1. Powder X-ray diffraction pattern of the material produced after thermally decomposing manganese (II) acetate for six or twelve hours at 150 °C in oleylamine under inert conditions.

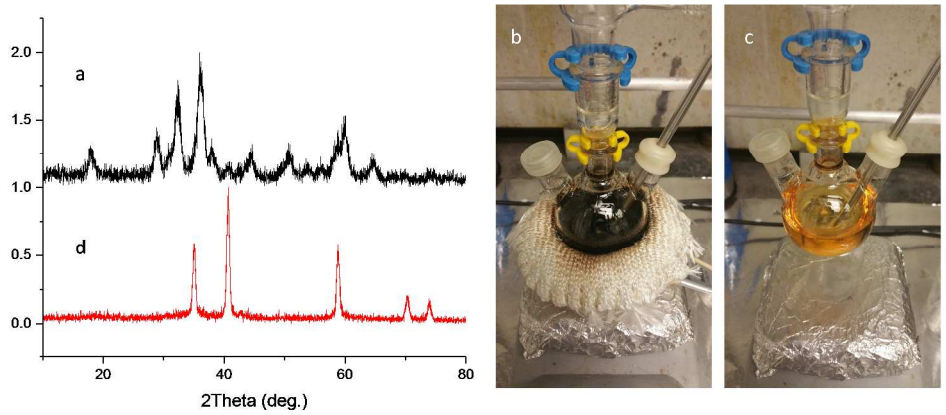

Figure S2. Powder X-ray diffraction pattern (a, d) of the material produced after thermally decomposing manganese (II) acetate for three hours at 175 °C in oleylamine under inert conditions. The reactions were different in that in (a, b) corresponds to a setup where the reaction was degassed only after reaching 100 °C, the image was taken at 100 °C after manganese (II) acetate dissolved into oleylamine. The brown colored solution always produced Mn_3O_4 upon completing annealing at 175 °C. On the other hand, (c, d) the precursor salt was added to oleylamine where the vessel was degassed once at room temperature then heated to 100 °C for regular degassing. Once manganese (II) acetate dissolved into solution (c), it was transparent and yellow, and annealing at 175 °C resulted in nanocrystals of pure MnO.

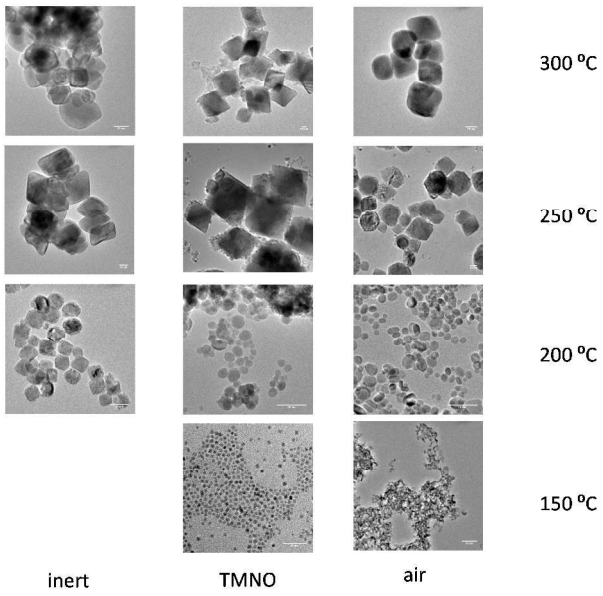

Figure S3. Transmission electron microscopy images following thermal decomposition of manganese (II) acetate in oleylamine for one hour at 150, 200, 250 and 300 °C under inert conditions or oxidized by TMNO or air. Scale bars correspond to 50 nm.

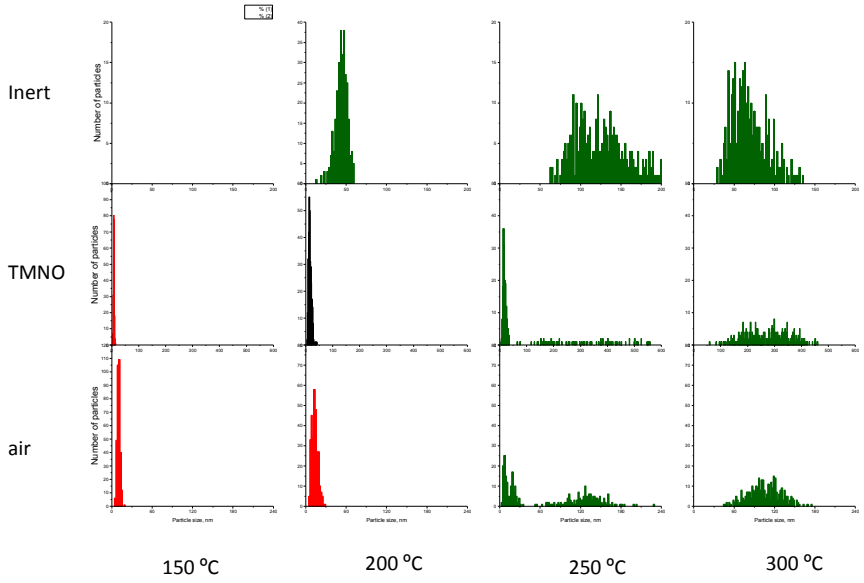

Figure S4. Histograms of particle size distribution following thermal decomposition of manganese (II) acetate in oleylamine for one hour at 150, 200, 250 and 300 °C under inert conditions or oxidized by TMNO or air. Red, green and black correspond to products' phase identified as pure Mn_3O_4, pure MnO and mixed Mn_3O_4/MnO, respectively.

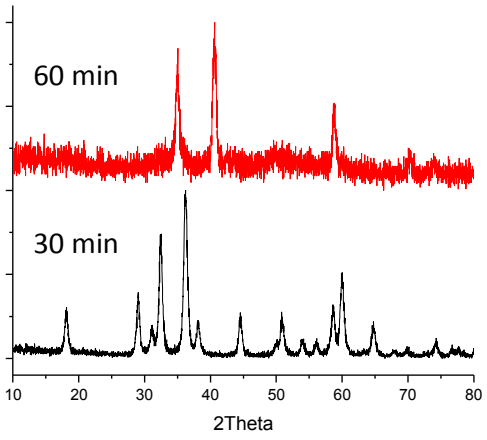

Figure S5. Powder X-ray diffraction of the powder product following the thermolysis of manganese (III) acetylacetonate in oleylamine at 250 °C while exposed to air.

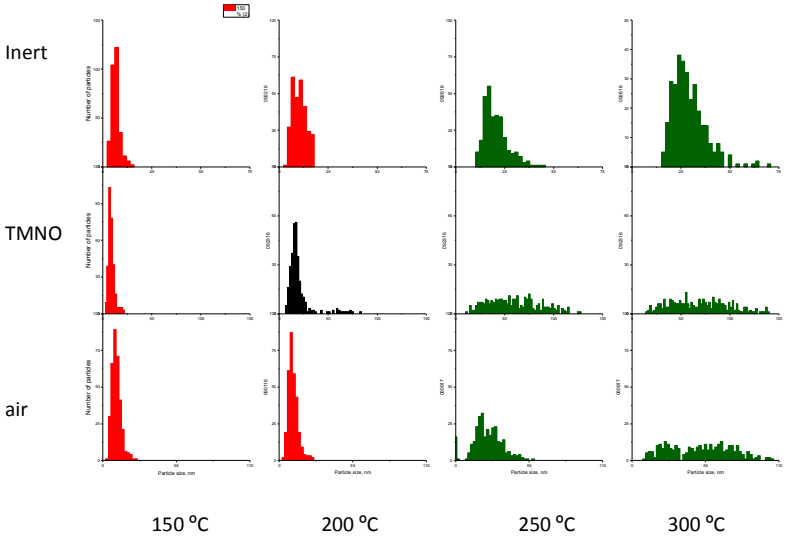

Figure S6. Histograms of particle size distribution following thermal decomposition of manganese (III) acetylacetonate in oleylamine for one hour at 150, 200, 250 and 300 °C under inert conditions, or oxidized by TMNO or air. Red, green and black correspond to products' phase identified as pure Mn_3O_4, pure MnO and mixed Mn_3O_4/MnO, respectively.

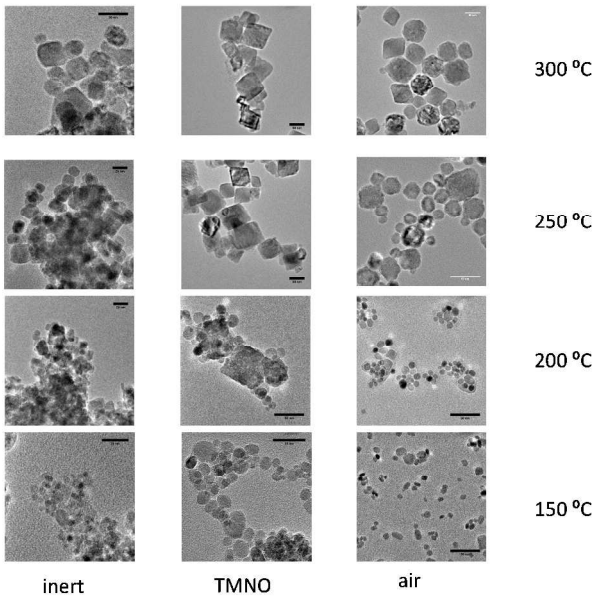

Figure S7. Transmission electron microscopy images following thermal decomposition of manganese (III) acetylacetonate in oleylamine for 1 h at 150, 200, 250 and 300 °C under inert conditions, or oxidized by TMNO or air. Scale bars correspond to 50 nm.