Supporting Information

Rational Surface Modification of Mn₃O₄ Nanoparticles to Induce Multiple Photoluminescence and Room Temperature Ferromagnetism

Anupam Giri, Nirmal Goswami, Monalisa Pal, Myo Tay Zar Myint, Salim Al-Harthi, Achintya Singh, Barnali Ghosh, Joydeep Dutta and Samir Kumar Pal*

aUnit for Nano Science & Technology, Department of Chemical, Biological and Macromolecular Sciences, S. N. Bose National Centre for Basic Sciences, Block JD, Sector III, Salt Lake, Kolkata 700 098, India

bChair in Nanotechnology, Water Research Center, Sultan Qaboos University, P.O. Box 17, 123 Al-Khoudh, Sultanate of Oman

cPhysics Department, College of Science, Sultan Qaboos University, P.O. Box 36, Al Khod 123, Oman

dDepartment of Physics, Bose Institute, 93/1, Acharya Prafulla Chandra Road, Kolkata 700 009, India

*Corresponding Authors Email: skpal@bose.res.in
Figure S1. UV-vis absorption spectrum of as-prepared Mn$_3$O$_4$ NPs thin film on quartz plate.

Figure S2. UV-vis absorption spectrum of diluted solution of Lactate-Mn$_3$O$_4$ NPs.
Figure S3. The EDX spectrum of T-Mn₃O₄ NPs shows the elemental composition of the NPs. Inset shows the SEM image of the T-Mn₃O₄ NPs sample. EDX maps of C K, O K, and Mn L lines are also shown in the inset.
Figure S4. Shows the fluorescence microscopic images of powder as-prepared Mn$_3$O$_4$ NPs under irradiation of white light (I, bright field) and light of two different wavelengths of 365 (II) and 436 nm (III), respectively.

Figure S5. Steady-state excitation and PL spectra ($\lambda_{\text{excitation}}$=330 nm) collected from Succinate-Mn$_3$O$_4$ NPs.
Figure S6. XRD pattern of as-prepared Mn$_3$O$_4$ NPs. All diffraction peaks in the figure is perfectly indexed in the literature to the tetragonal structure of Mn$_3$O$_4$ NPs (hausmannite).
Figure S7. XPS survey spectrum of T-Mn$_3$O$_4$ NPs.