Formation of Inorganic Liquid Gallium Particles-Manganese Oxides Composites

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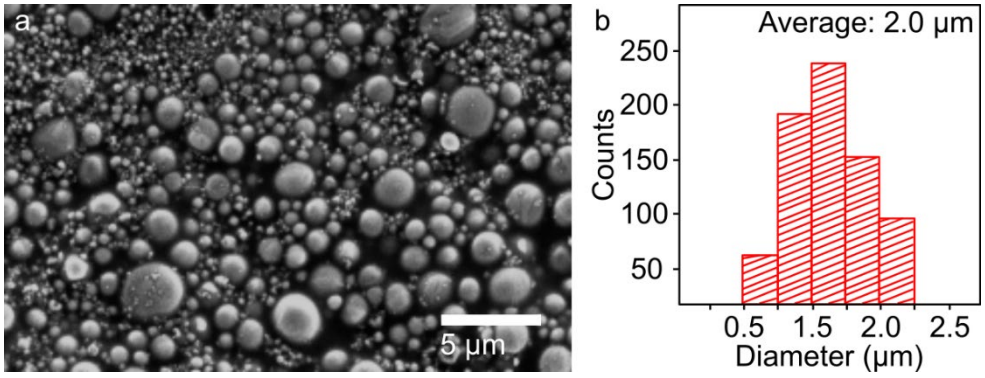

Fig. S1 (a) SEM image of the Ga particles synthesised after 40 minutes of bath sonication. (b) Particle size distribution of the synthesised Ga particles.

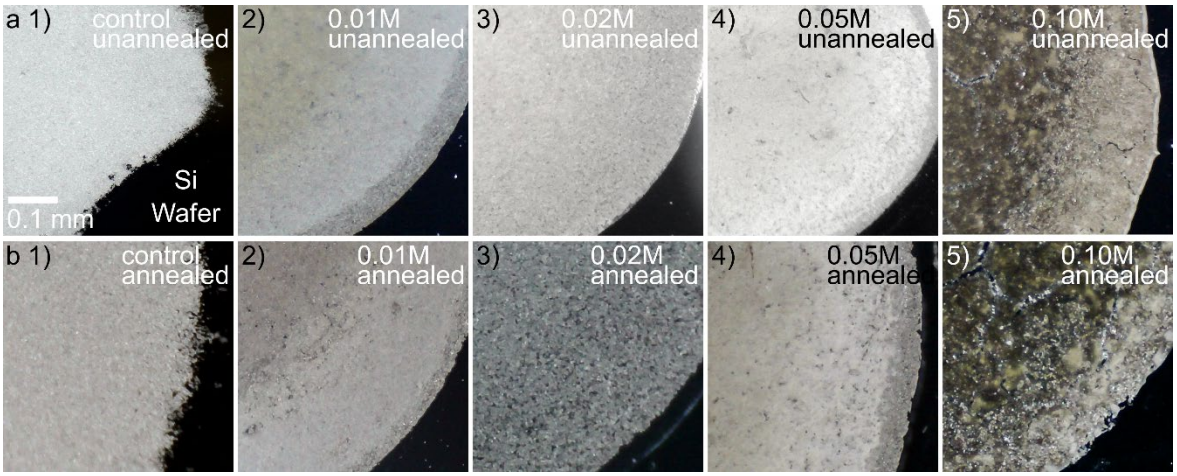

Fig. S2 Optical images of the inorganic liquid Ga and Mn oxide composites: (a) before annealing and (b) after annealing.

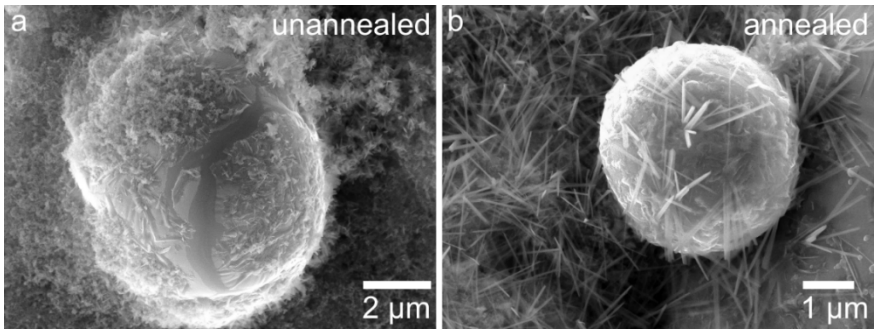

Fig. S3 SEM images showing the surface features of the 40 minutes reaction 0.10 M $KMnO_4$ samples of (a) unannealed and (b) annealed.

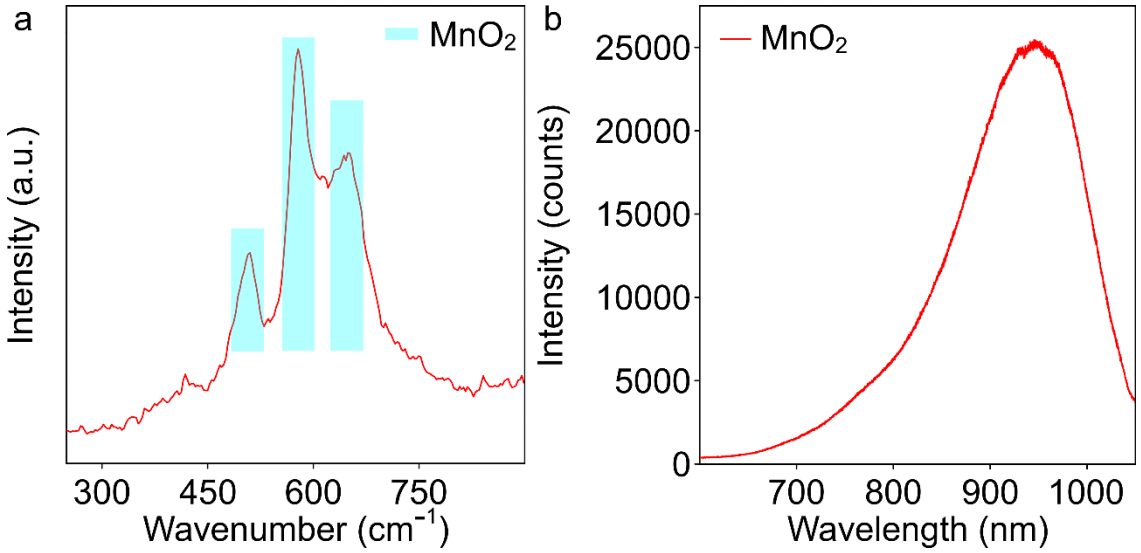

Fig.S4 (a) Raman and (b) photoluminescence spectra of MnO_2 control synthesised on liquid Ga.

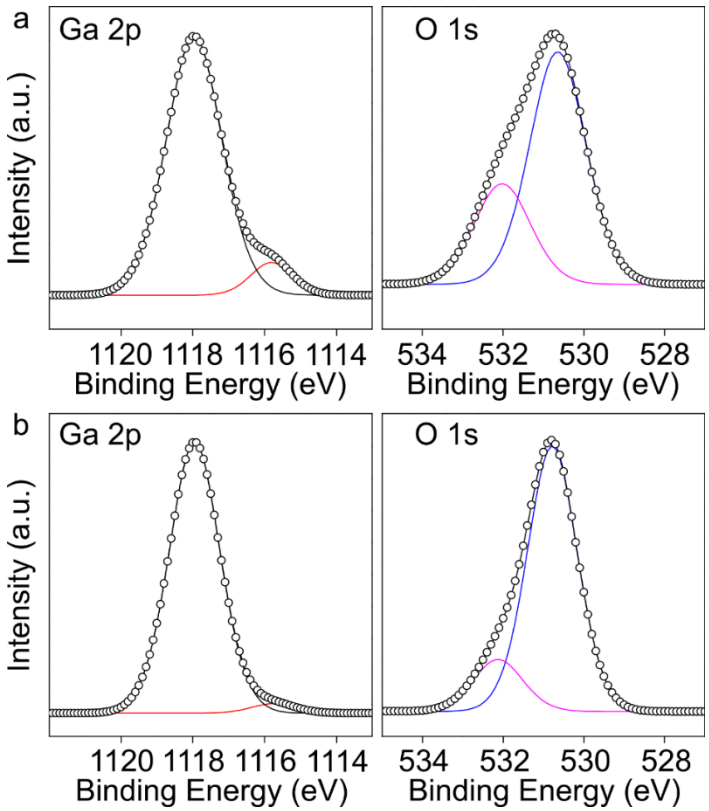

Fig. S5 High resolution Ga 2p and O 1s XPS spectra of the (a) unannealed and (b) annealed Ga samples.

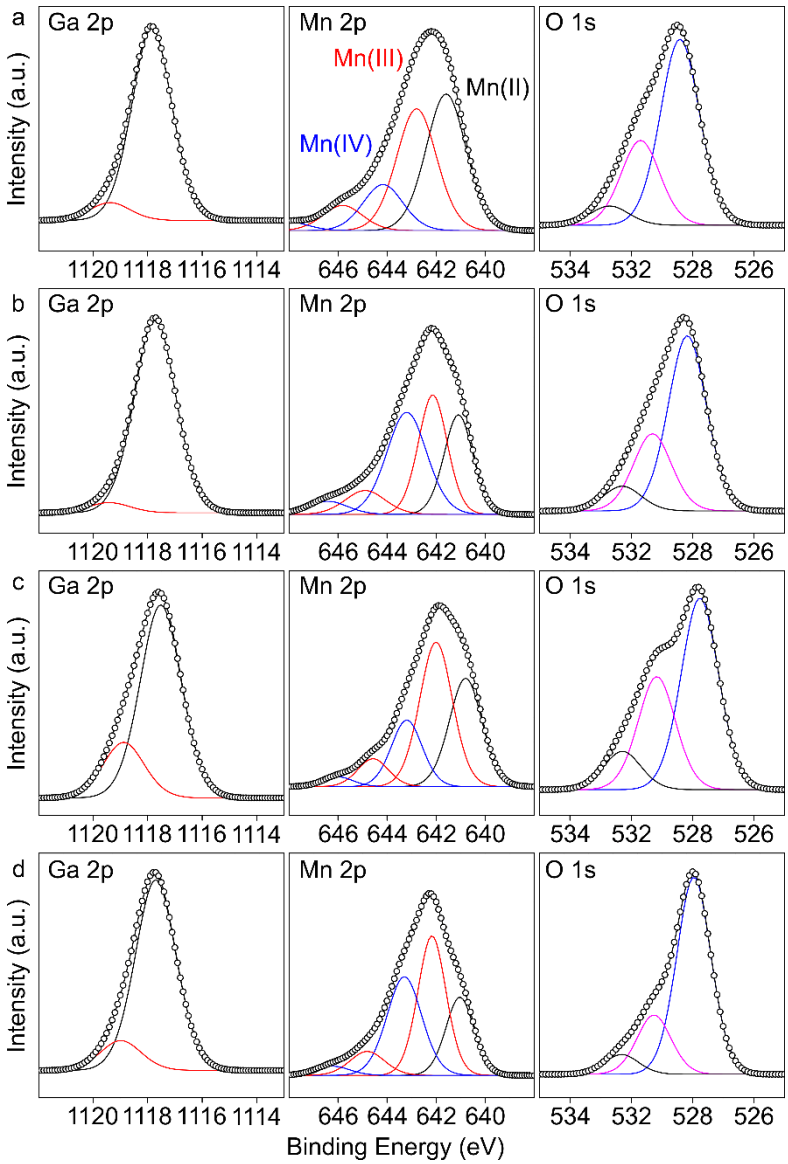

Fig. S6 High resolution Ga 2p, Mn 2p and O 1s XPS spectra of annealed inorganic liquid Ga and Mn oxide composites synthesised with (a) 0.01 M $KMnO_4$, (b) 0.02 M $KMnO_4$, (c) 0.05 M $KMnO_4$ and (d) 0.10 M $KMnO_4$.

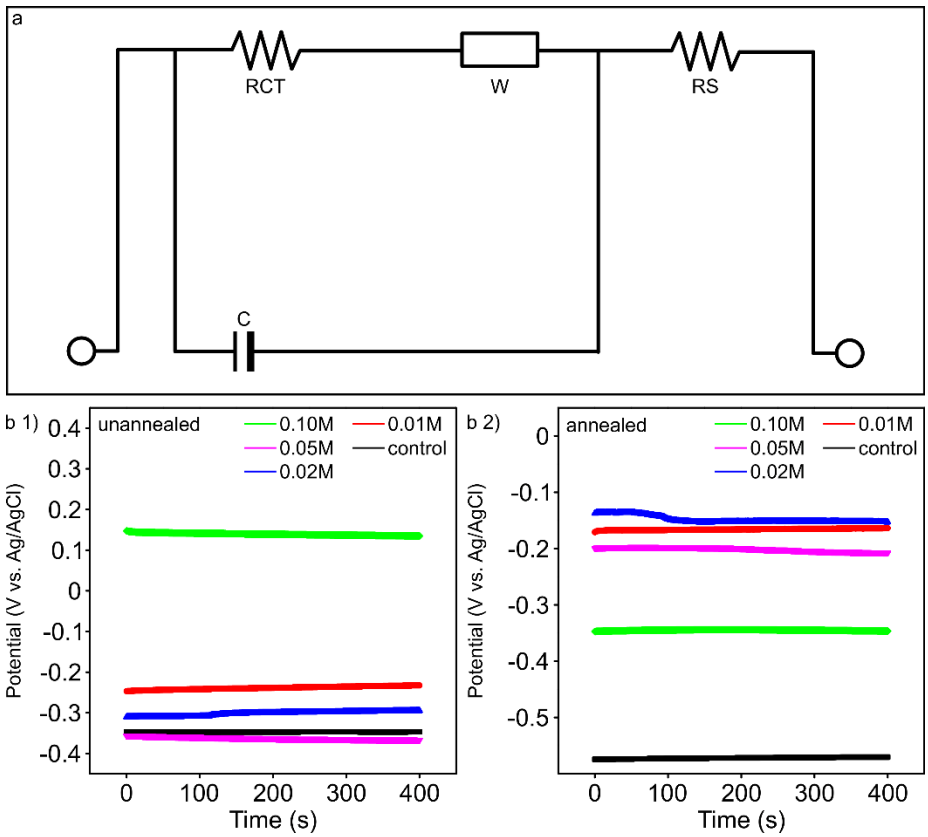

Fig. S7 (a) Corresponding equivalent circuit. (b) Open circuit potential measurements of the inorganic liquid Ga and Mn oxide composites.

Table S1 R_S and OCP values of the composites.

	Unannealed		Annealed	
Sample	**R_S (Ω)**	**OCP (V)**	**R_S (Ω)**	**OCP (V)**
Ga	49.28	-0.35	55.73	-0.57
0.01 M	37.98	-0.24	52.72	-0.16
0.02 M	66.45	-0.30	52.80	-0.15
0.05 M	39.07	-0.37	45.39	-0.21
0.1 M	47.15	0.14	51.89	-0.34