

Supplementary Materials: Effect of Deposition Parameters on Morphological and Compositional Characteristics of Electrode-deposited CuFeO₂ Film

Min-Kyu Son

Nano Convergence Materials Center, Emerging Materials R&D Division, Korea Institute of Ceramic Engineering & Technology (KICET), Jinju 52851, Republic of Korea; minkyu.son@kicet.re.kr; Tel.: +82-55-792-2683

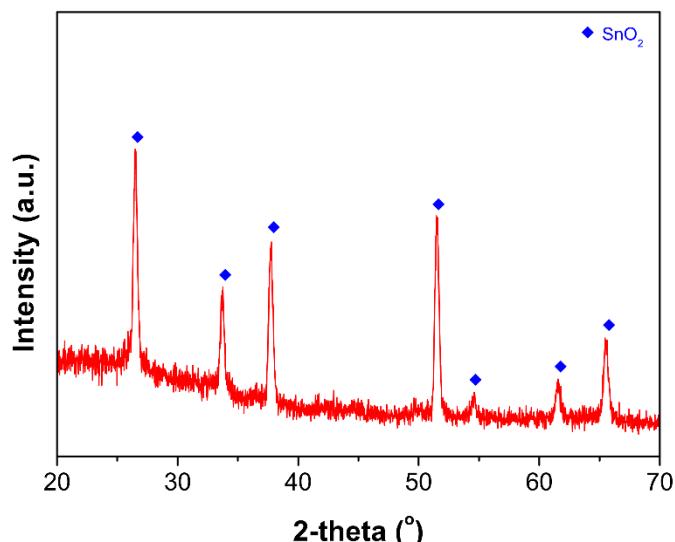


Figure S1. The XRD pattern of pristine electrodeposited CuFeO₂ film in the DMSO-based electrolyte containing 1 mM Cu(NO₃)₂·xH₂O, 3 mM Fe(ClO₄)₃·xH₂O, and 100 mM potassium perchlorate by applying a current density of - 0.2 mA cm⁻² for 60 min.

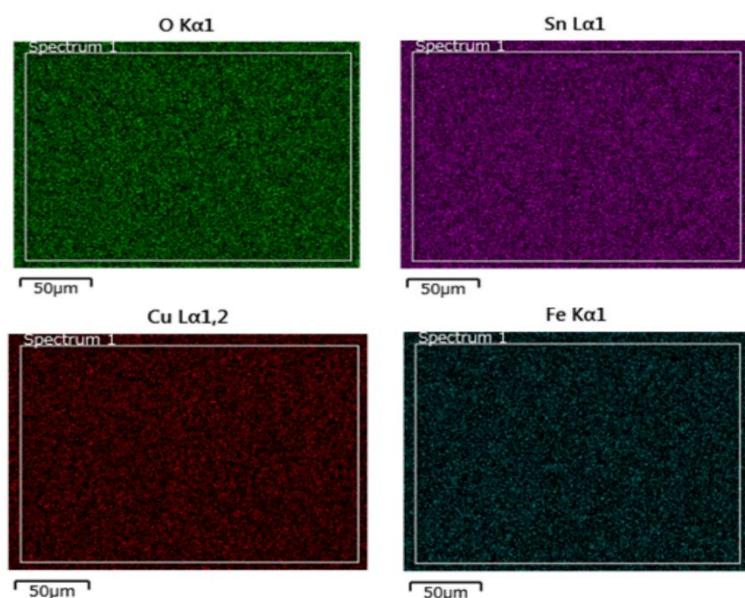


Figure S2. The top-view EDX characterization of the electrodeposited CuFeO₂ film in the DMSO-based electrolyte containing 1 mM Cu(NO₃)₂·xH₂O, 3 mM Fe(ClO₄)₃·xH₂O, and 100 mM potassium

perchlorate by applying a current density of - 0.2 mA cm⁻² for 60 min after post annealing treatment at 650 °C for 60 min under N₂ gas flow.

Table S1. Comparison of electrodeposition conditions and characteristics of electrodeposited film with previous studies and this work.

Electrodeposition mode	Applied Voltage/Current	Solvent	Electrolyte	Post treatment	Film	Ref.
Potentiostatic	-0.3 V (vs Ag/AgCl)	DMSO	1 mM Cu(NO ₃) ₂ ·xH ₂ O, 3 mM Fe(ClO ₄) ₃ ·xH ₂ O, 100 mM KClO ₄	Annealing at 650 °C under Ar flow	CuFeO ₂	[9]
Potentiostatic	-	DMSO	0.01 M CuCl ₂ , 0.005 M Fe(ClO ₄) ₃ , 0.1 M LiClO ₄	Annealing at 650 °C under Ar flow	CuFeO ₂	[36]
Potentiostatic	-0.36 V (vs SCE)	Water	4 mM Cu(NO ₃) ₂ ·3H ₂ O, 12 mM Fe(ClO ₄) ₃ ·H ₂ O, 50 mM KClO ₄	Annealing at 650 °C in air	CuFeO ₂ +Cu _O	[37]
Galvanostatic	-0.1 ~ -0.3 mA cm ⁻²	DMSO/ Water	1 mM Cu(NO ₃) ₂ ·xH ₂ O, 3 mM Fe(ClO ₄) ₃ ·xH ₂ O, 100 mM KClO ₄ / 4 mM Cu(NO ₃) ₂ ·xH ₂ O, 12 mM Fe(ClO ₄) ₃ ·xH ₂ O, 50 mM KClO ₄	Annealing at 650 °C under N ₂ flow	CuFeO ₂ /CuFeO ₂ +Cu _O / Cu ₂ O	This Work