

Fabrication and Development of Binder-Free Mn–Fe–S Mixed Metal Sulfide Loaded Ni-Foam as Electrode for the Asymmetric Coin Cell Supercapacitor Device

Jae Cheol Shin *, Hee Kwon Yang, Jeong Seok Lee, Jong Hyuk Lee, Min Gyu Kang and Ein Kwon

Division of Electronics and Electrical Engineering, Dongguk University-Seoul, Seoul 04620, Korea

* Correspondence: author: jcshin@dgu.ac.kr

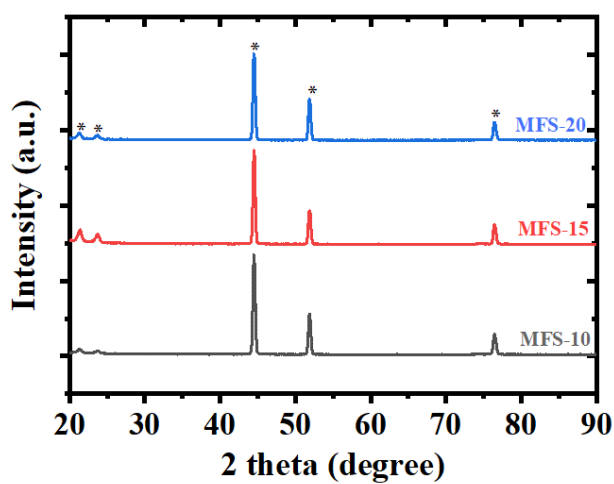


Figure S1. X-ray diffraction pattern of MFS samples prepared at different deposition cycle.

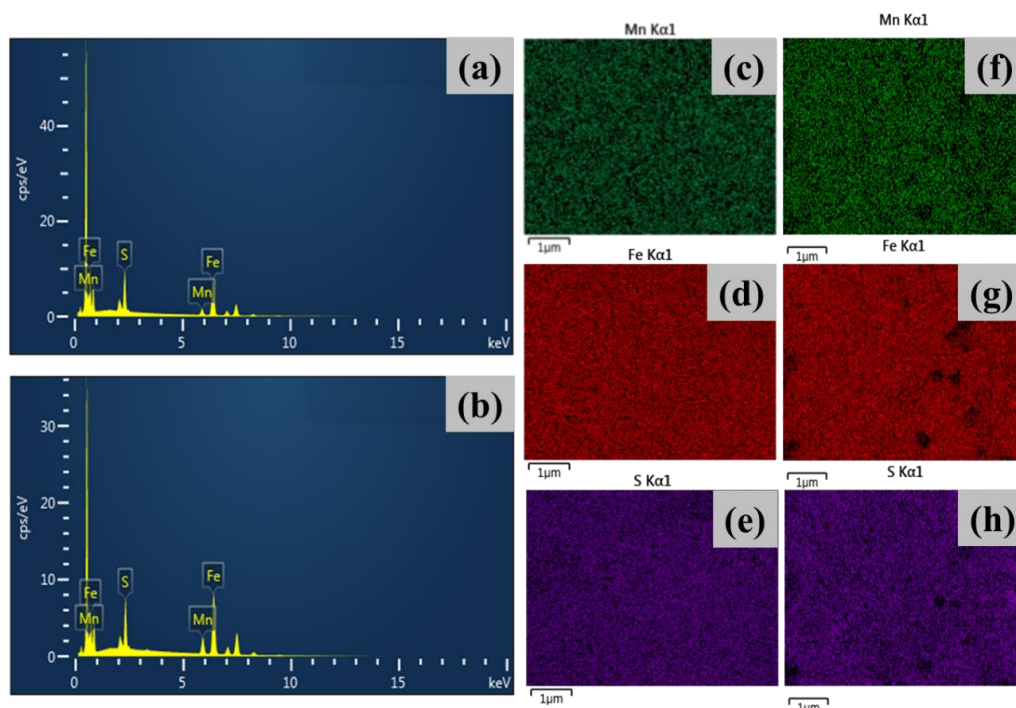


Figure S2. elemental analysis using energy dispersive spectroscopy of (a) MFS-10, (b) MFS-20, elemental mapping of MFS-10 and MFS-20 sample (c and f) Mn K α 1, (d and g) Fe K α 1, (e and h) S K α 1, respectively.

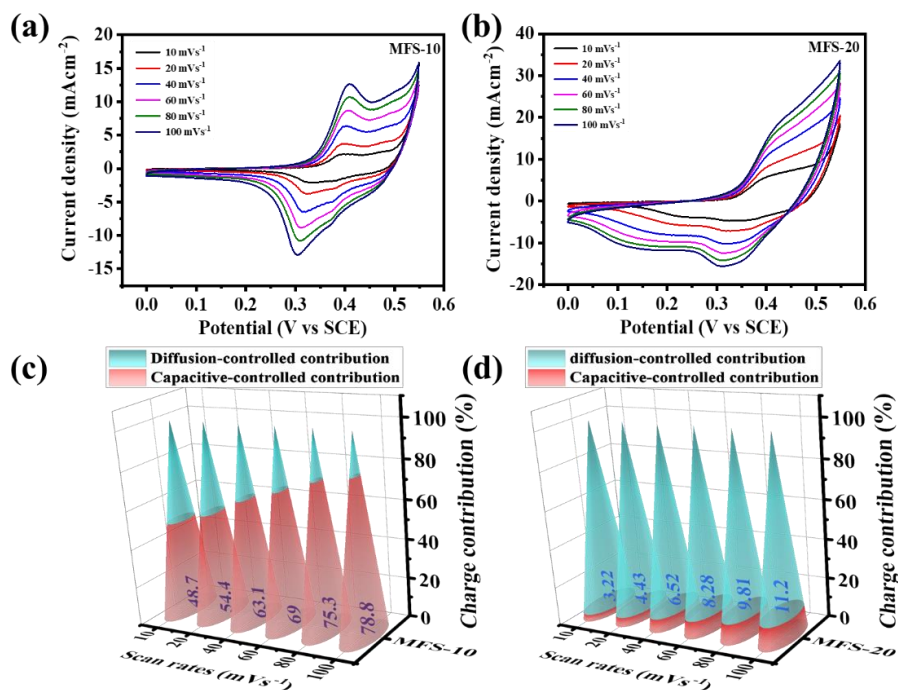


Figure S3. Cyclic voltammetry measured in 1 M KOH electrolyte at different scan rates (a) MFS-10, (b) MFS-20, diffusion and capacitive charge contribution calculated at different scan rates (c) MFS-10 and (d) MFS-20 electrode.

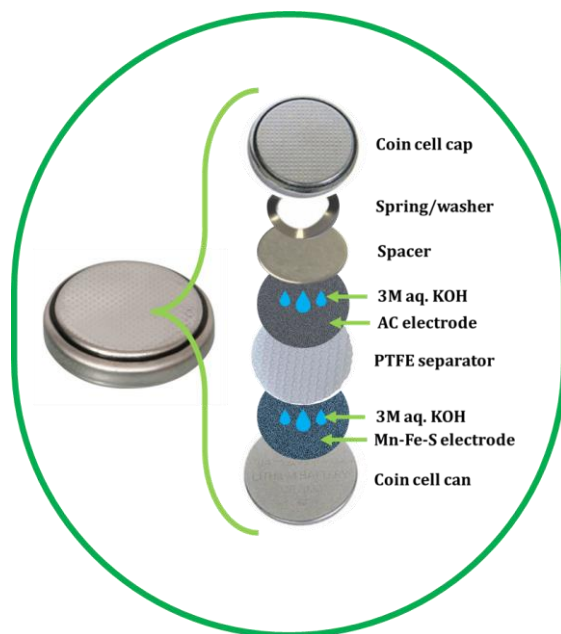


Figure S4. Schematic representation of coin cell assembly with their parts.

Table S1. Data table for quantitative elemental distribution (wt. %) of MFS samples.

Element	MFS - 10	Weight %	
		MFS -15	MFS -20
S	14.76	13.65	10.75
Mn	10.91	15.29	16.71
Fe	74.34	71.06	72.54
Total	100.00	100.00	100.00