

Supporting Information

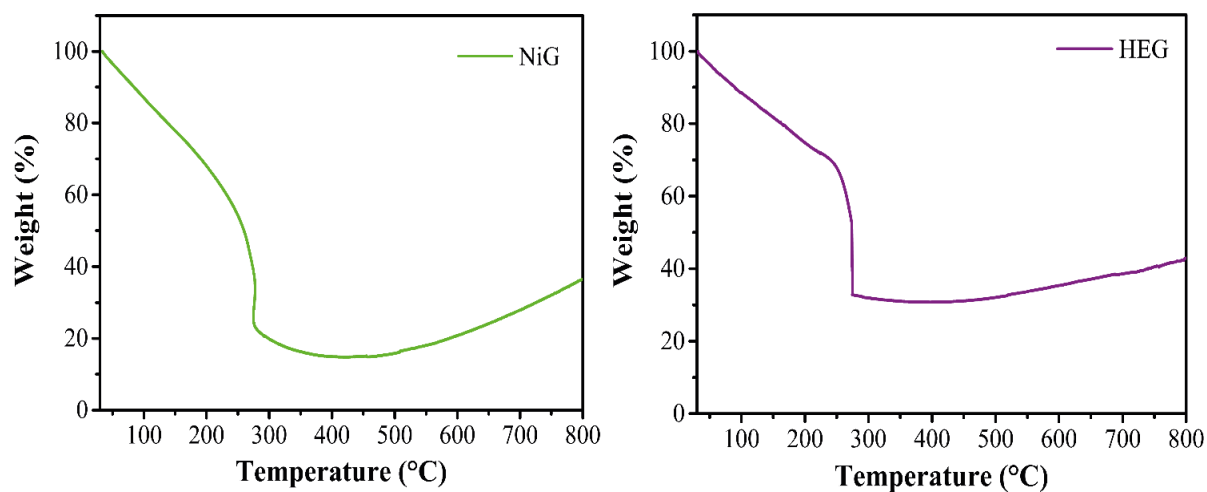


Figure S1. TGA curve of (a) NiG and (b) HEG, in the range of 35 to 800 °C with a heating rate of 4 °C min⁻¹, in synthetic air.

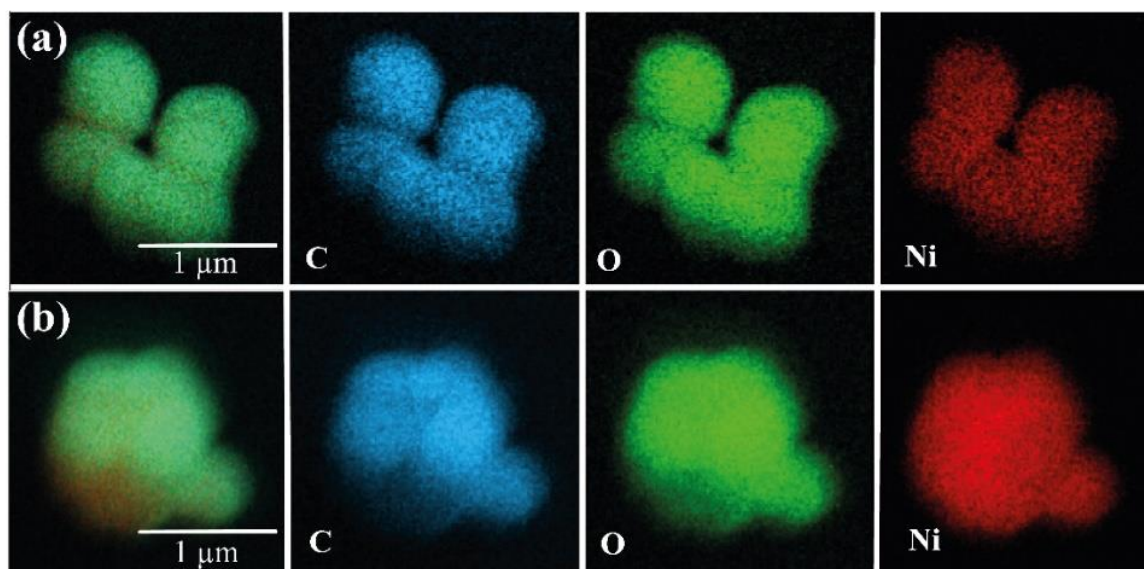


Figure S2. SEM-EDS analysis of NiG in two more different regions. Carbon (light blue), oxygen (green), nickel (red). With a magnification of $\times 34,000$.

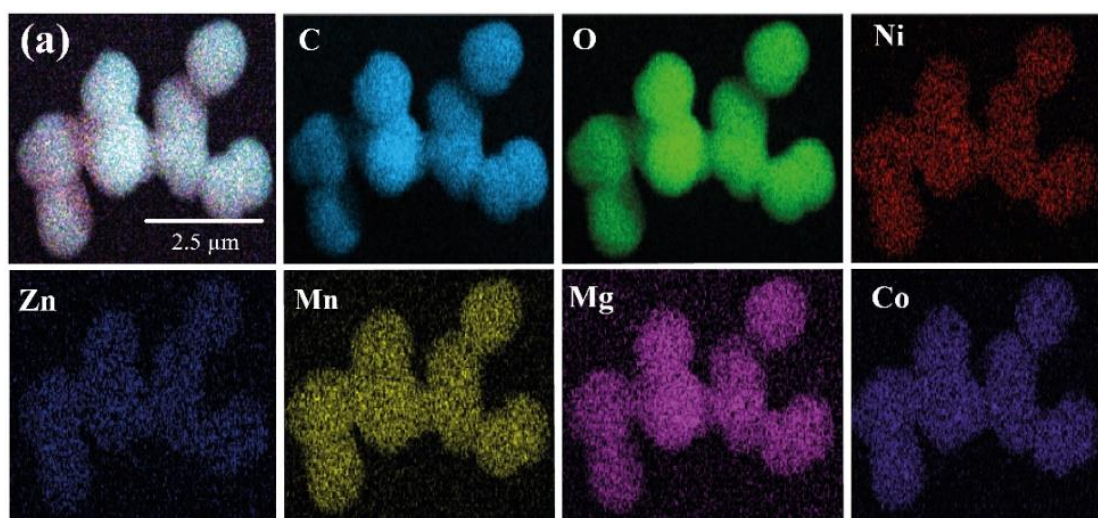


Figure S3. SEM-EDS analysis of HEG microspheres. Carbon (light blue), oxygen (green), nickel (red), zinc (blue), manganese (yellow), magnesium (magenta), and cobalt (lilac). With a magnification of $\times 11,500$.

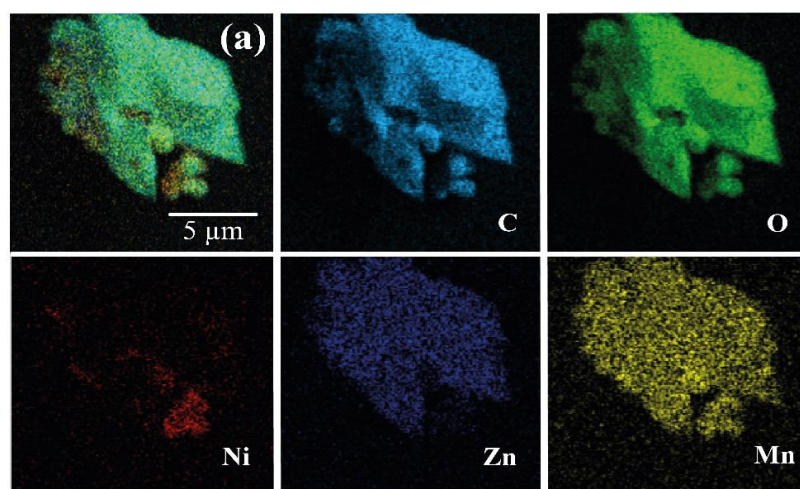


Figure S4. SEM-EDS images of NiMnZnG showing the high content of zinc and manganese. The plate morphology indicates phase segregation. Carbon (light blue), oxygen (green), nickel (red), zinc (blue), manganese (yellow), magnesium (magenta), and cobalt (lilac). With a magnification of $\times 4,500$.

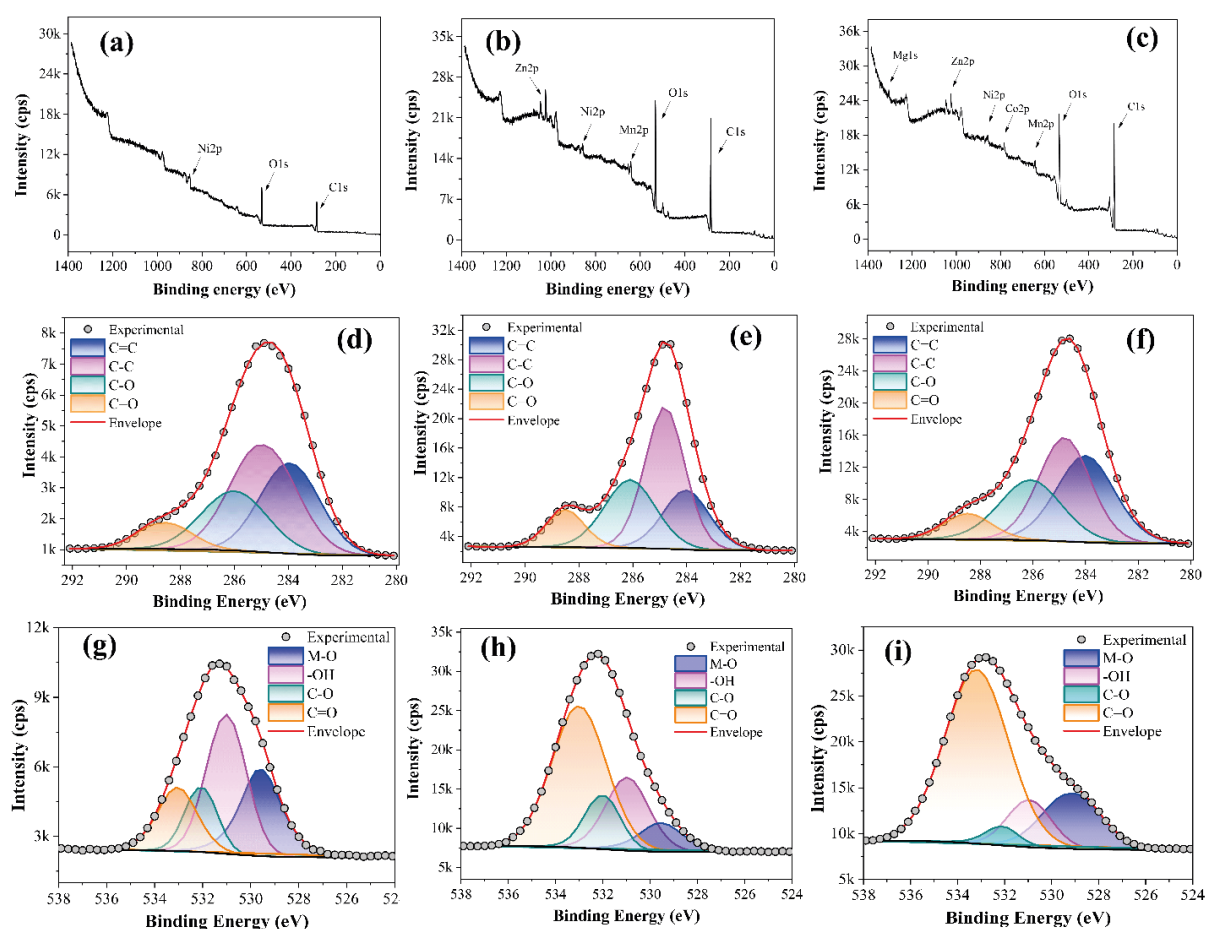


Figure S5. Survey spectra of NiG (a), NiMnZnG (b), and HEG (c) and their respective high-resolution XPS spectra for C 1s and O 1s components. NiG (d–g), NiMnZnG (e–h), and HEG (f–i), respectively.

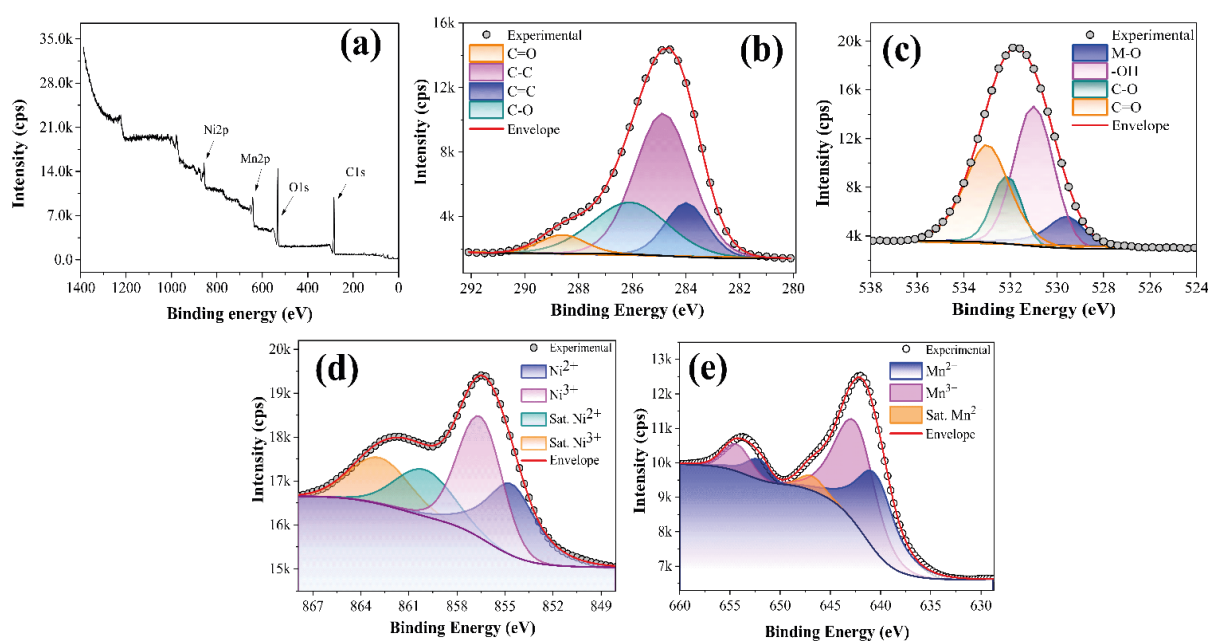


Figure S6. Survey spectra of NiMnG (a), and their respective high-resolution XPS spectra for (b) C 1s, (c) O 1s, (d) Ni 2p and (e) Mn 2p.

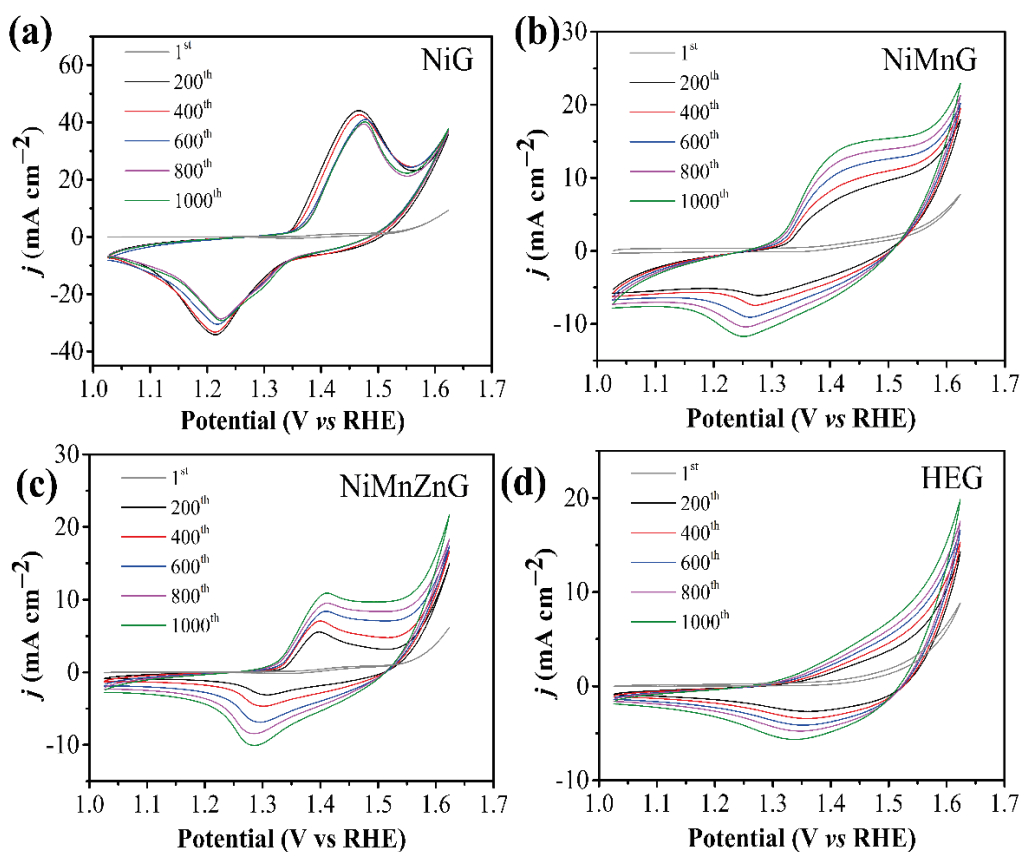


Figure S7. Progression of 1000-cycle CV curve of glycerolates modified CPE at a scan rate of 100 mV s⁻¹ in 1.0 M KOH electrolyte.

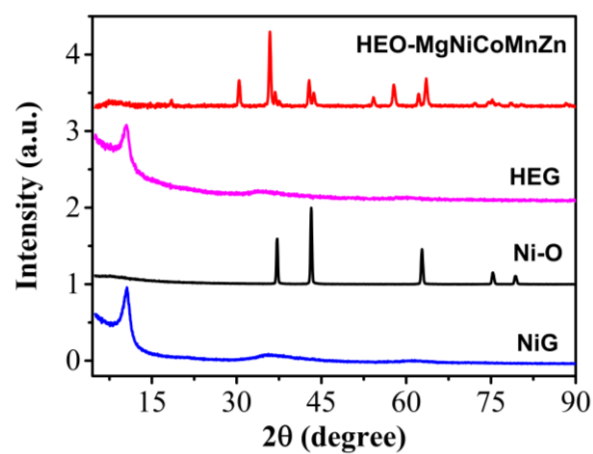


Figure S8. XRD pattern of NiG, HEG, and their respective metal oxides obtained by thermal treatment at 800 °C.

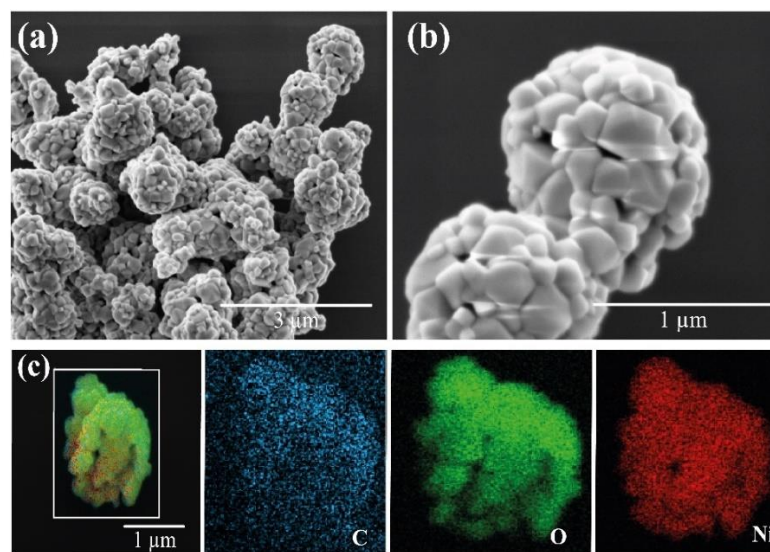


Figure S9. (a-b) SEM images of NiO. (c) SEM-EDS mappings of NiO. Carbon (light blue), oxygen (green), nickel (red). With a magnification of (a) $\times 12,000$ and (b) $\times 45,000$ and (c) $\times 18,000$.

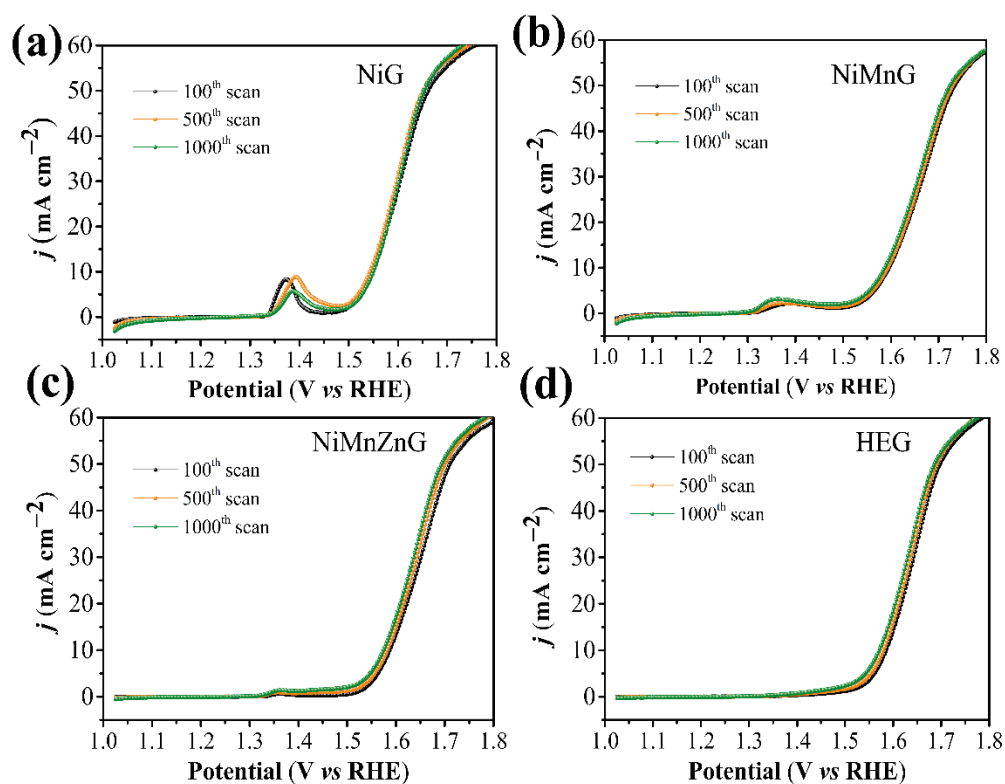


Figure S10. (a) LSV curves of glycerolates modified CPE collected at a scan rate of $5\ \text{mV s}^{-1}$ in $1.0\ \text{M}$ KOH electrolyte after 100th, 500th, and 1000th scans.