

Supplementary materials

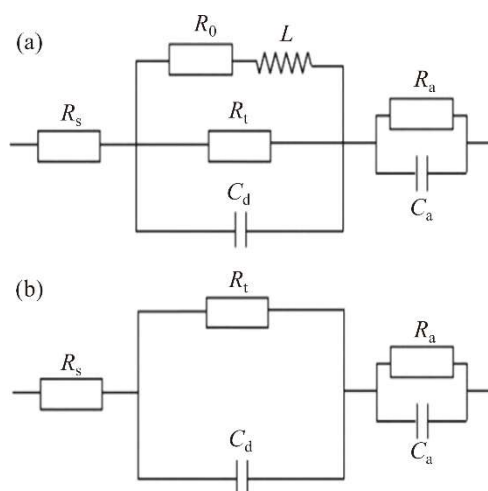


Figure S1 Equivalent circuit diagram of magnesium alloy: (a) Mg-3Al-1Zn-0.03Mn and Mg-3Al-1Zn-0.03Mn-0.1Er; (b) Mg-3Al-1Zn-0.03Mn-0.5Er and Mg-3Al-1Zn-0.03Mn-1.2Er

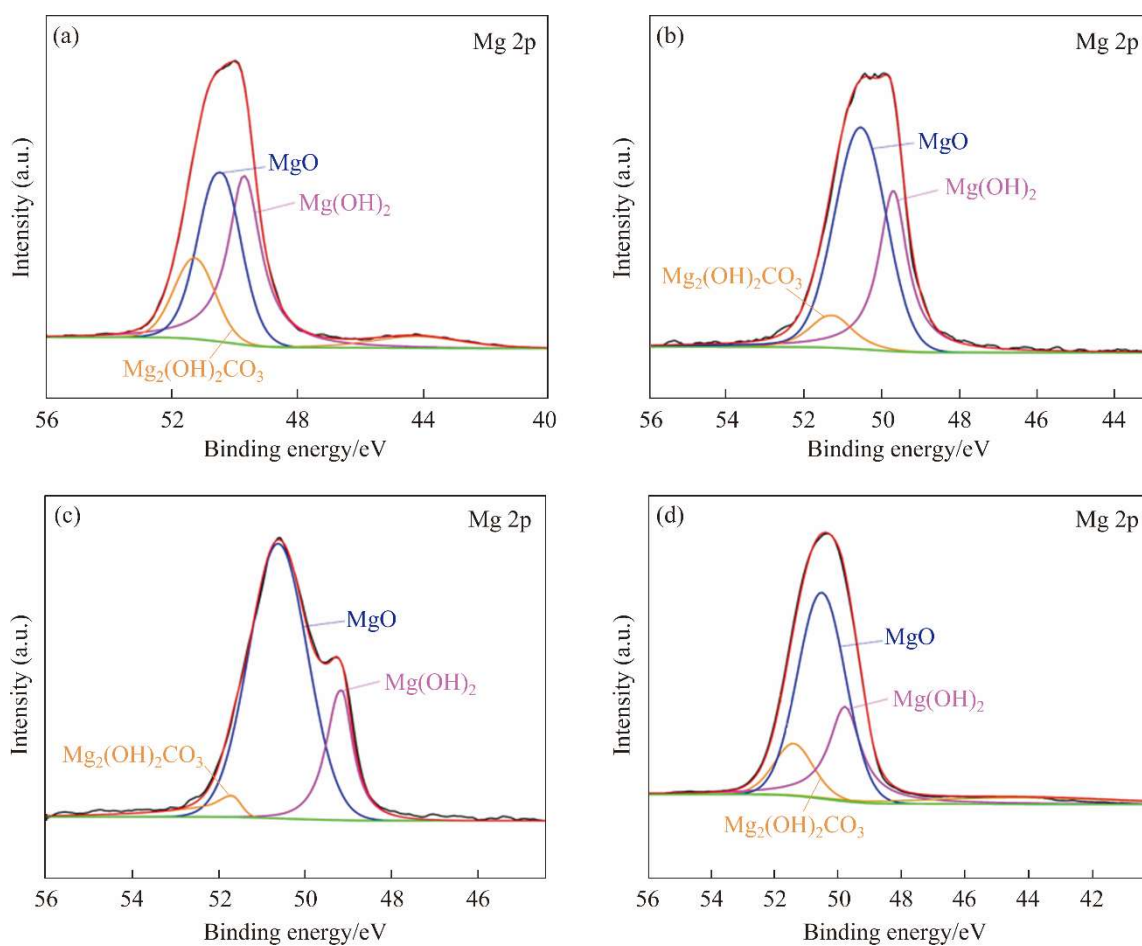


Figure S2 Mg 2p narrow XPS spectra: (a) Mg-3Al-1Zn-0.03Mn; (b) Mg-3Al-1Zn-0.03Mn-0.1Er; (c) Mg-3Al-1Zn-0.03Mn-0.5Er; (d) Mg-3Al-1Zn-0.03Mn-1.2Er

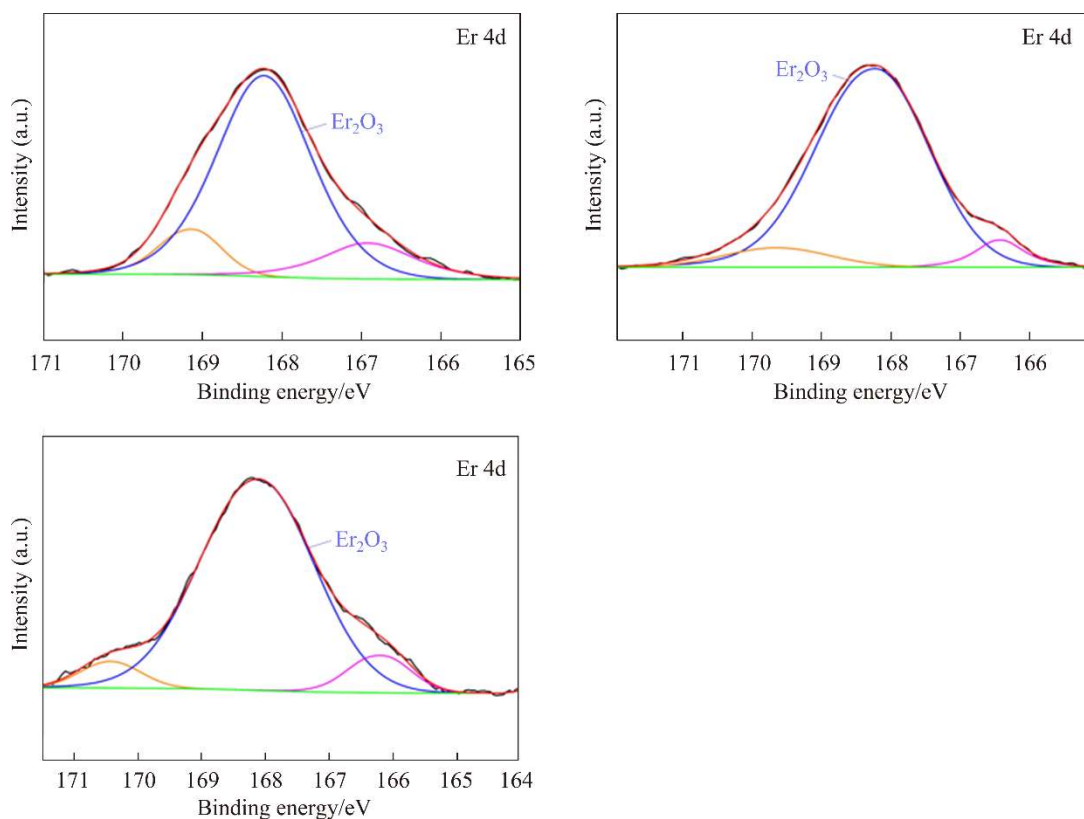


Figure S3 Er 4d narrow XPS spectra: (a) Mg-3Al-1Zn-0.03Mn-0.1Er; (b) Mg-3Al-1Zn-0.03Mn-0.5Er; (c) Mg-3Al-1Zn-0.03Mn-1.2Er

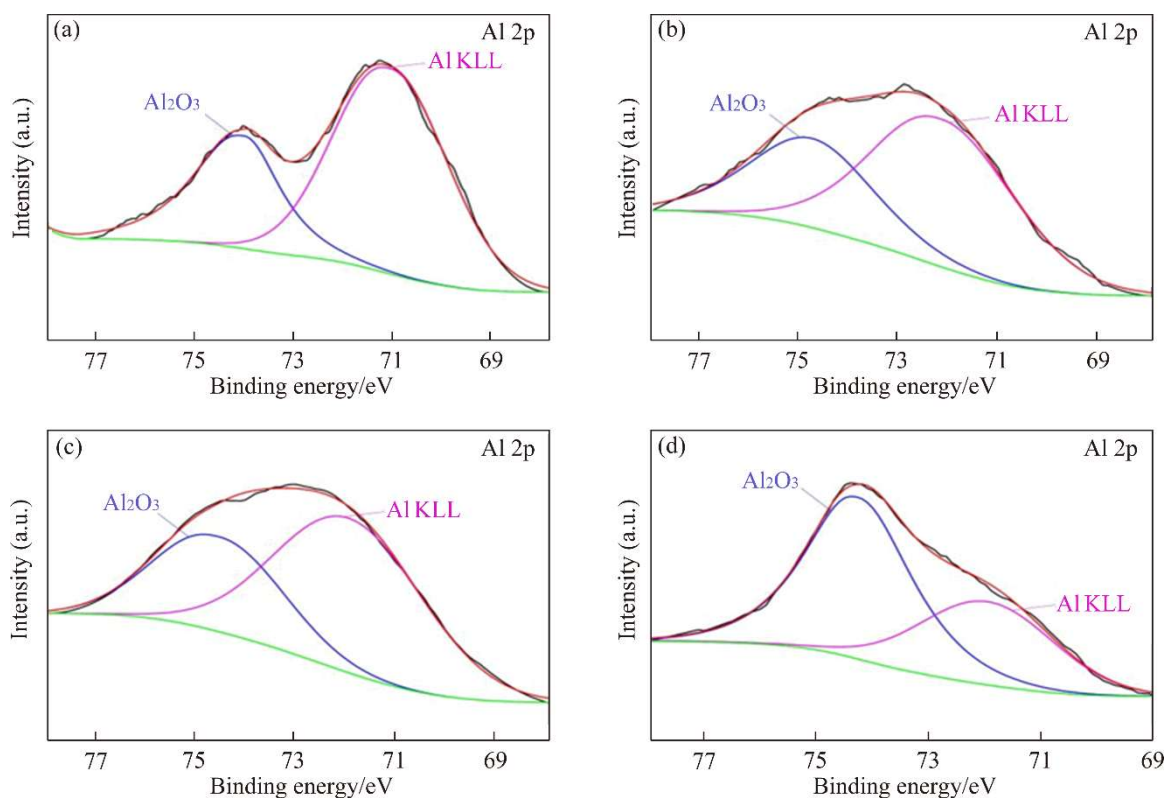


Figure S4 Al 2p narrow XPS spectra: (a) Mg-3Al-1Zn-0.03Mn; (b) Mg-3Al-1Zn-0.03Mn-0.1Er; (c) Mg-3Al-1Zn-0.03Mn-0.5Er; (d) Mg-3Al-1Zn-0.03Mn-1.2Er

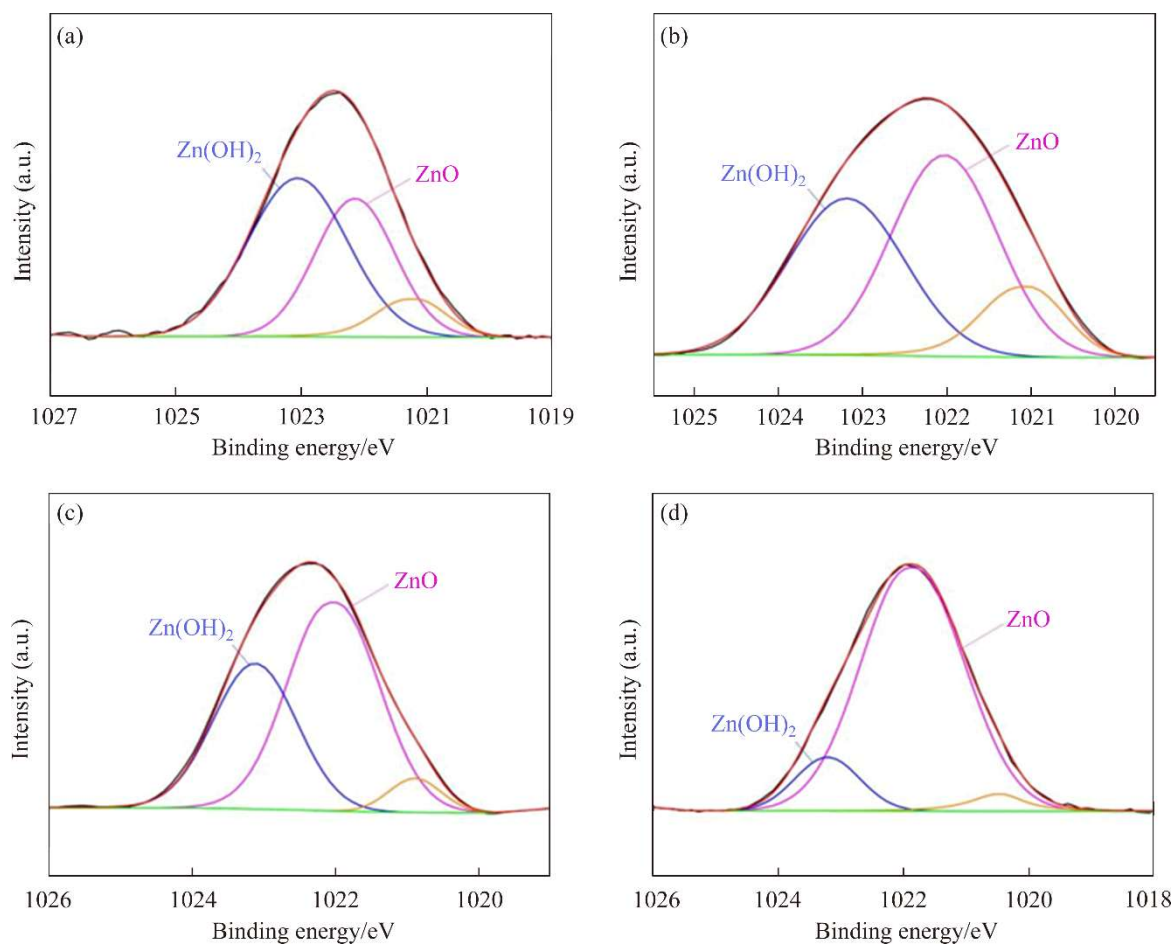


Figure S5 Zn 2p narrow XPS spectra: (a) Mg-3Al-1Zn-0.03Mn; (b) Mg-3Al-1Zn-0.03Mn-0.1Er; (c) Mg-3Al-1Zn-0.03Mn-0.5Er; (d) Mg-3Al-1Zn-0.03Mn-1.2Er