Optimization of diffusion dynamics in Mn-doped Co_3O_4/rGO hybrid electrodes for efficient energy storage in asymmetric supercapacitors

Farhan Ahmad[1], Abdul Shakoor[1], Ahsan Iqbal[1], Asif Mahmood[2], Waheed Al-Masry[2],
Farooq Ahmad[1], Shahid Atiq[1,]*

[1]*Centre of Excellence in Solid State Physics, University of the Punjab, Lahore-54590, Pakistan*
[2]*College of Engineering, Chemical Engineering Department, King Saud University, 11421, Riyadh, Saudi Arabia*
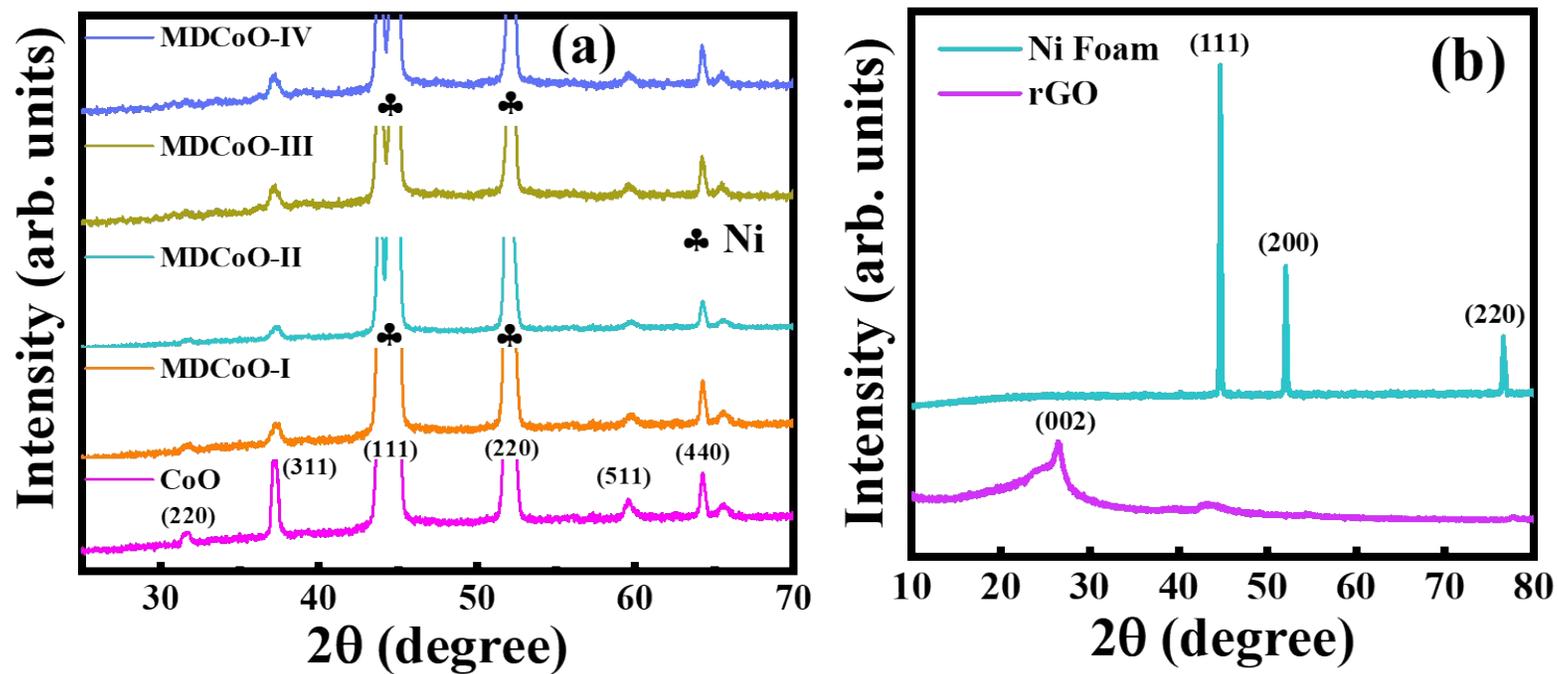
Fig. S1 (a) XRD patterns of CoO, MDCoO-I, MDCoO-II, MDCoO-III, and MDCoO-IV, and **(b)** XRD patterns of rGO and nickel foam.
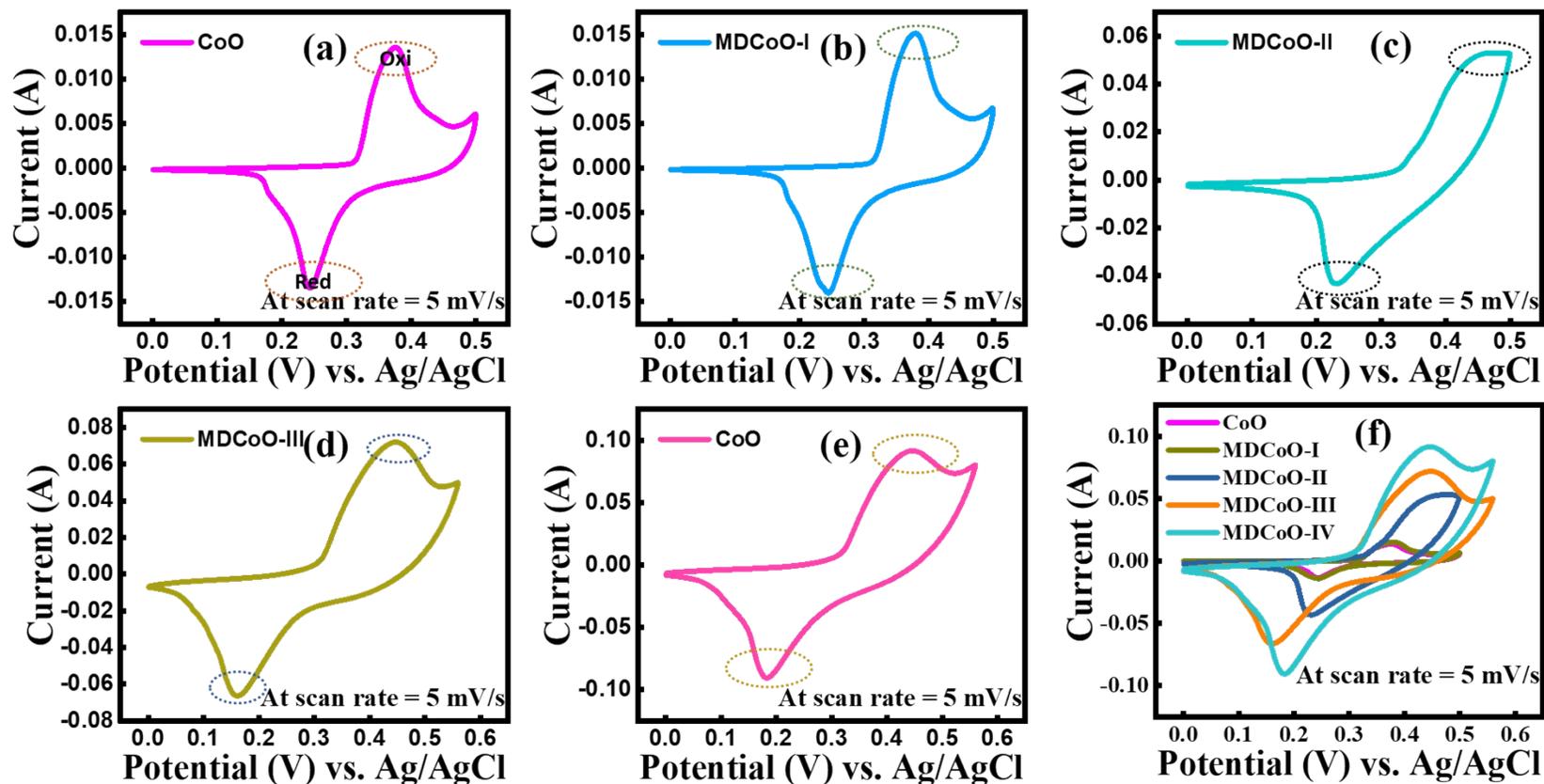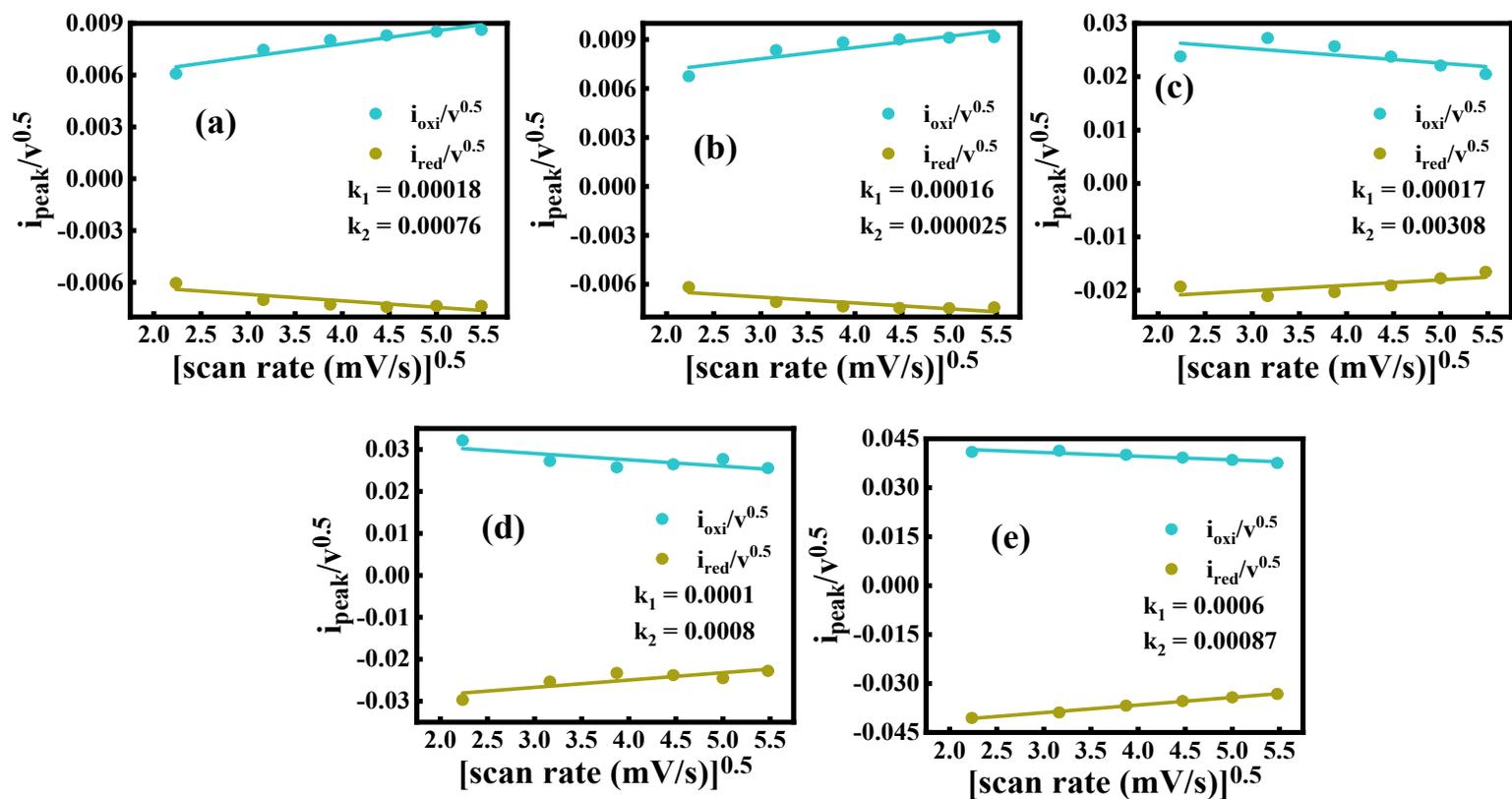
Fig. S2 CV curves at 5 mV/s for all samples.

Fig. S3(a-e) Contribution parameters k_1 and k_2 (average slope and intercept of anodic and cathodic peak) from linear fitting using

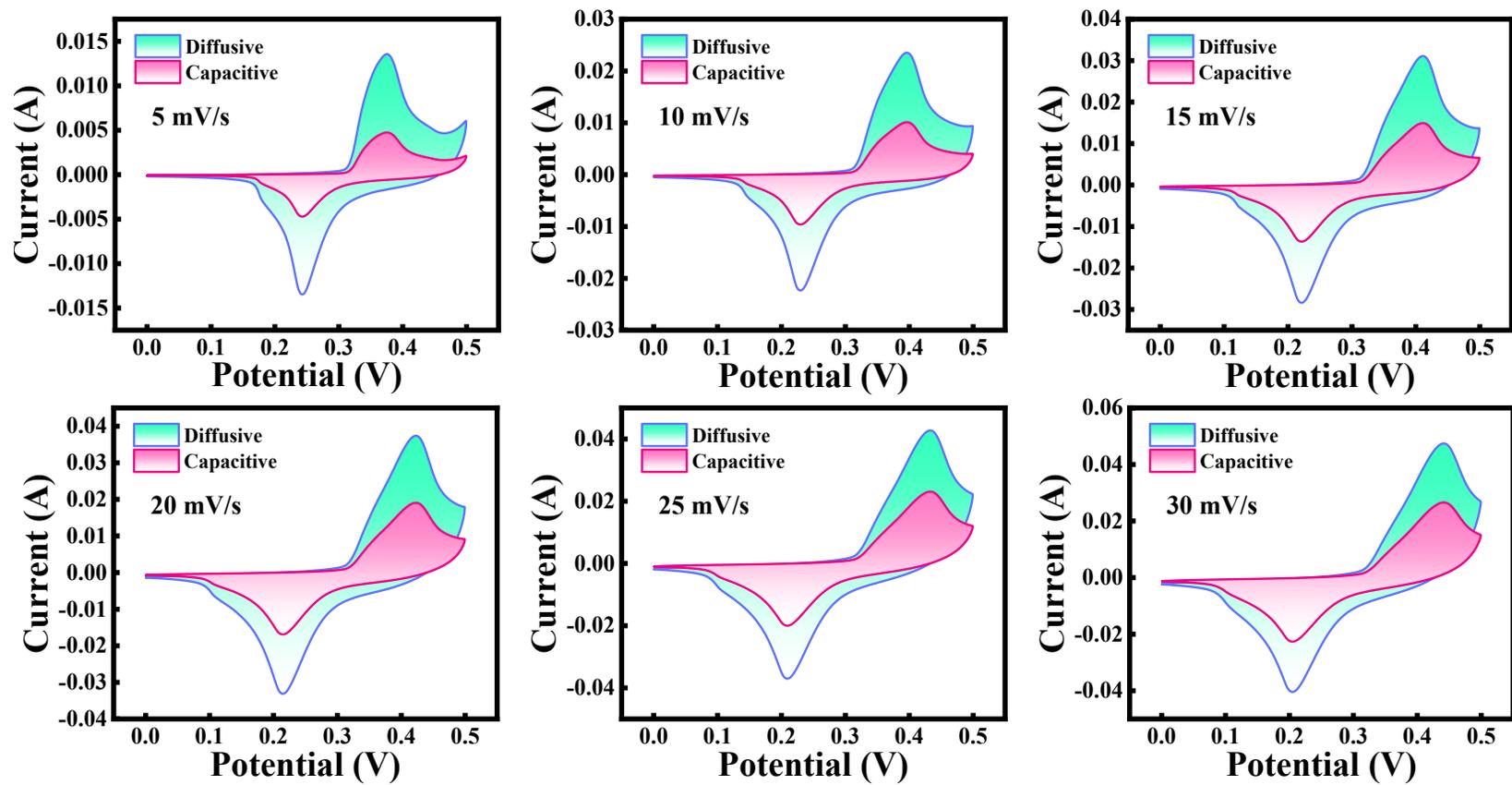equation $\dfrac{i_{peak}}{v^{0.5}} = k_1 v^{0.5} + k_2$ for all samples.

Fig. S4 (a) CV curves of CoO at different scan rates and **(b-f)** Capacitive and diffusive contributions for CoO content at different scan rates.
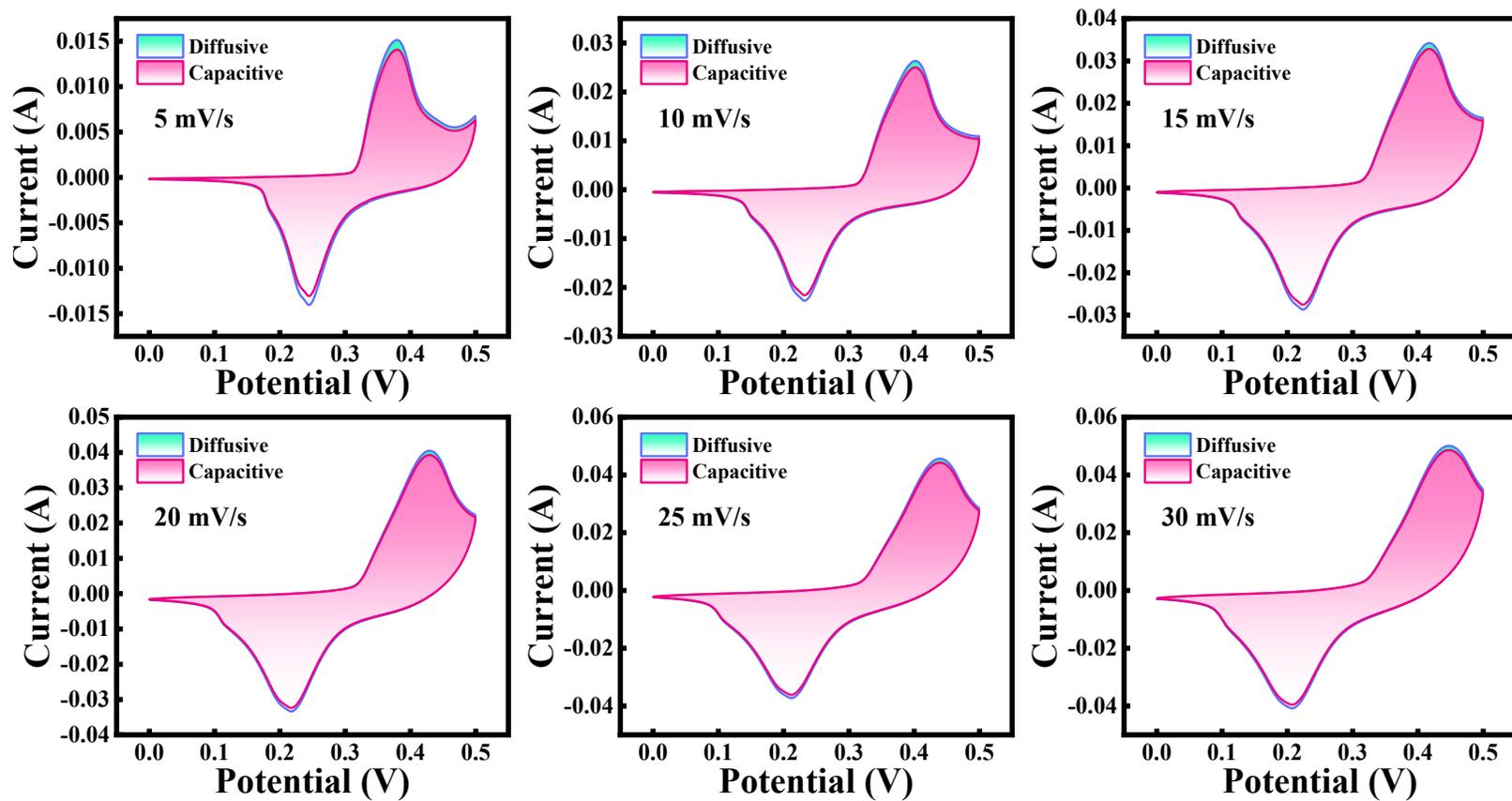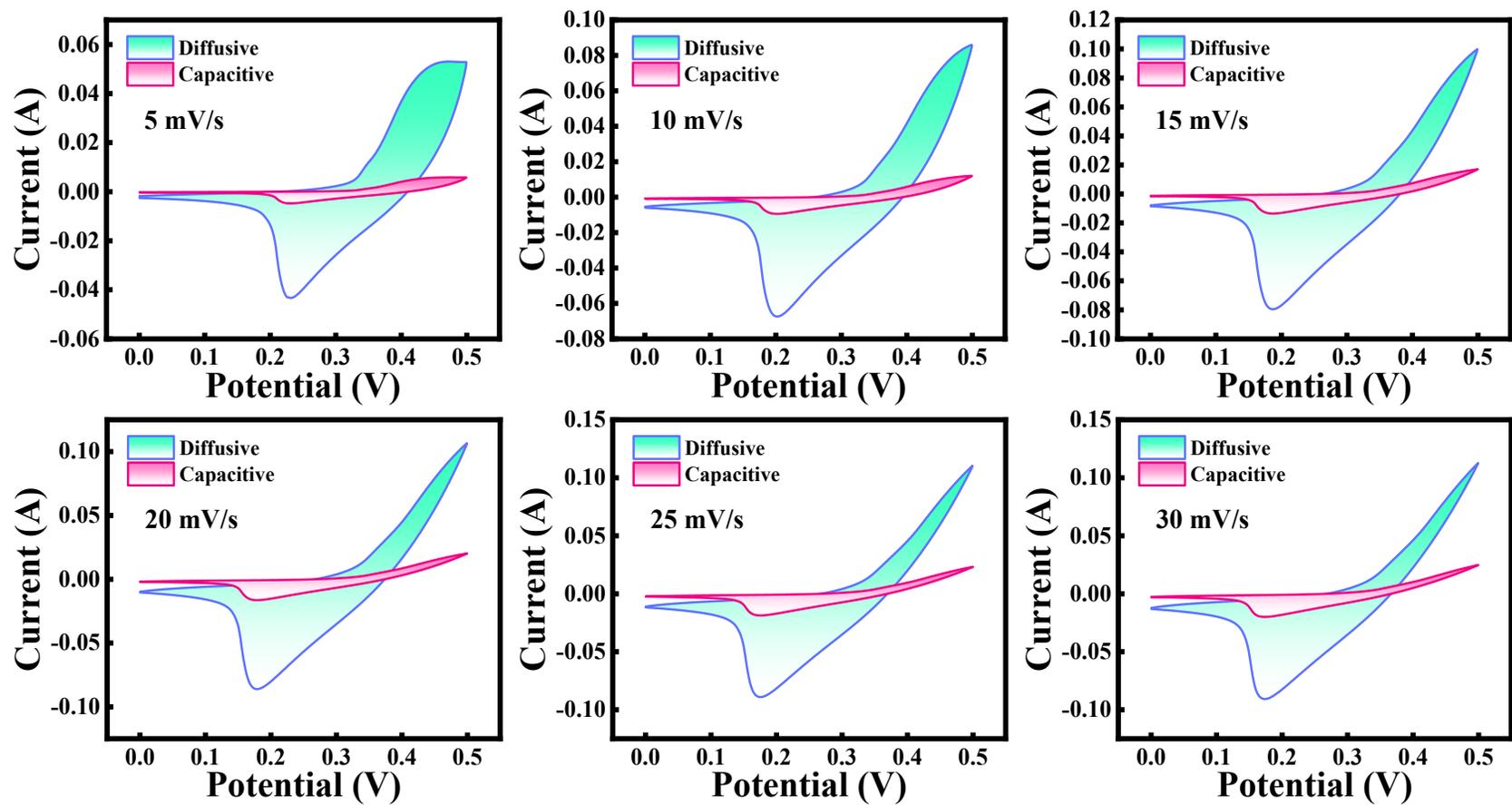
Fig. S5 (a) CV curves of MDCoO-I at different scan rates and **(b-f)** Capacitive and diffusive contributions for MDCoO-I at different scan rates.

Fig. S6 (a) CV curves of MDCoO-II at different scan rates and **(b-f)** Capacitive and diffusive contributions for MDCoO-II at different scan rates.
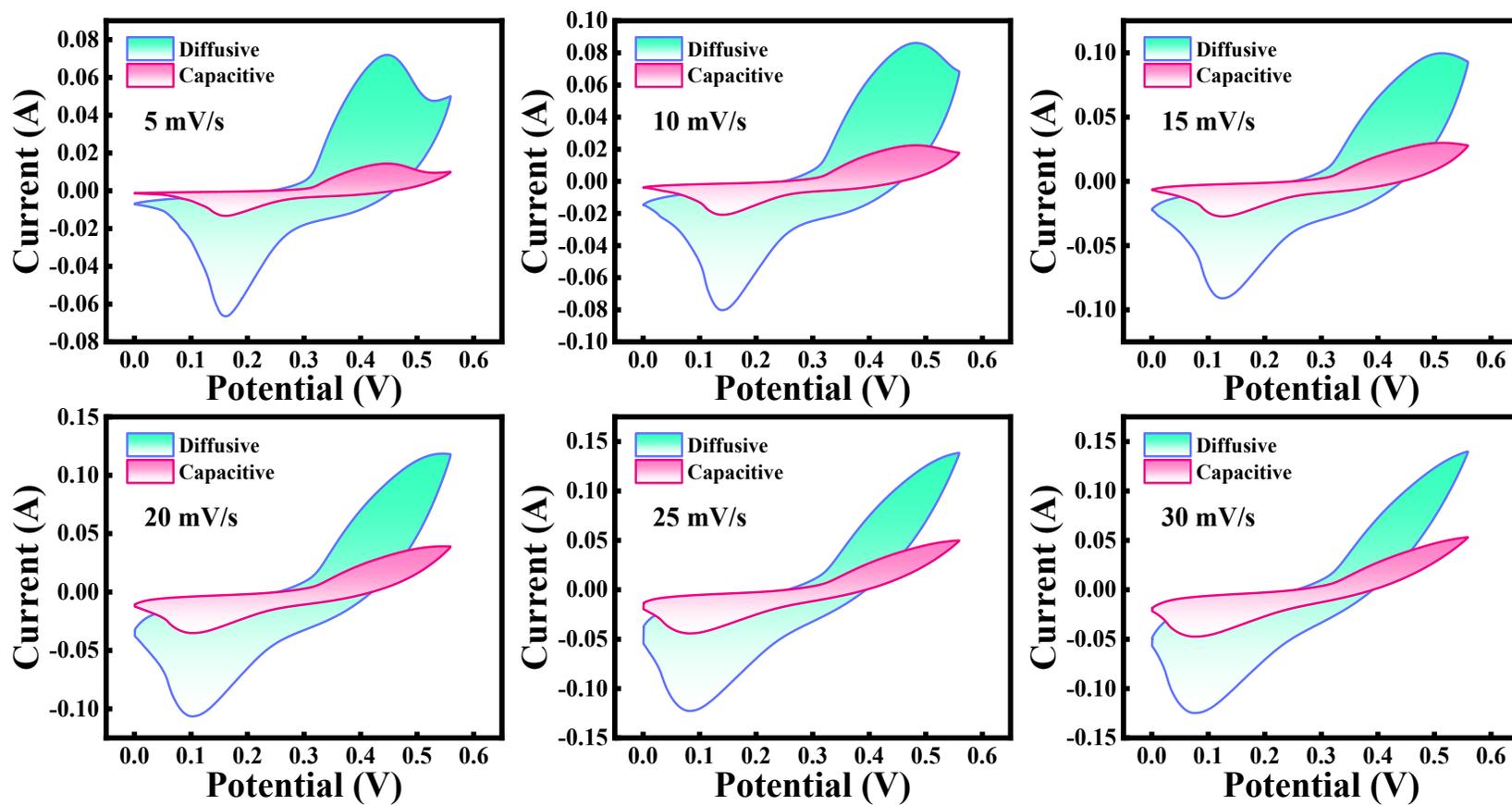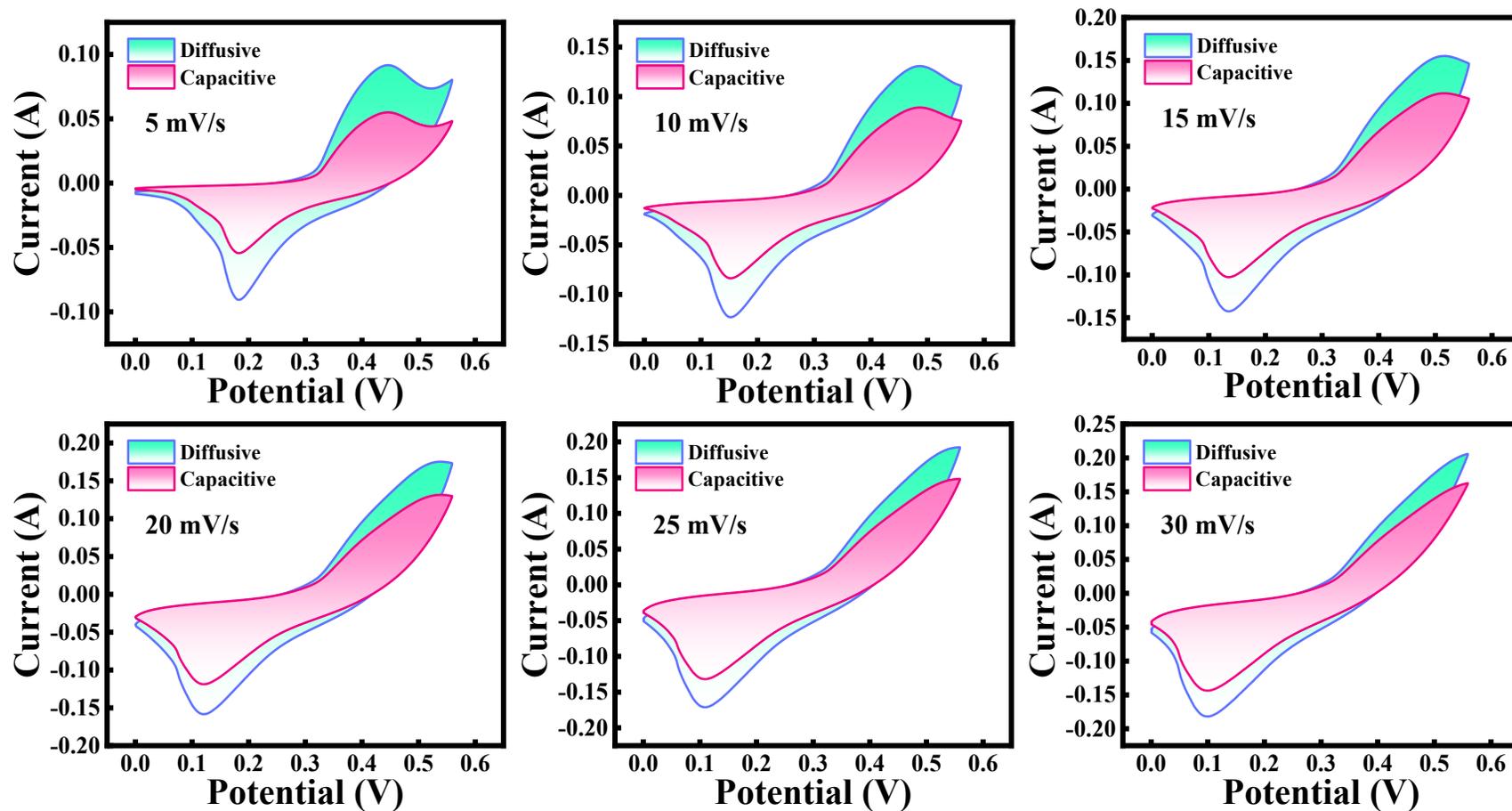
Fig. S7 (a) CV curves of MDCoO-III at different scan rates and **(b-f)** Capacitive and diffusive contributions for MDCoO-III at different scan rates.

Fig. S8 (a) CV curves of MDCoO-IV with different scan rates and **(b-f)** Capacitive and diffusive contributions for MDCoO-IV content at different scan rates.