

Tuning Diffusion Coefficient, Ionic Conductivity, and Transference Number in rGO/BaCoO₃ Electrode Material for Optimized Supercapacitor Energy Storage

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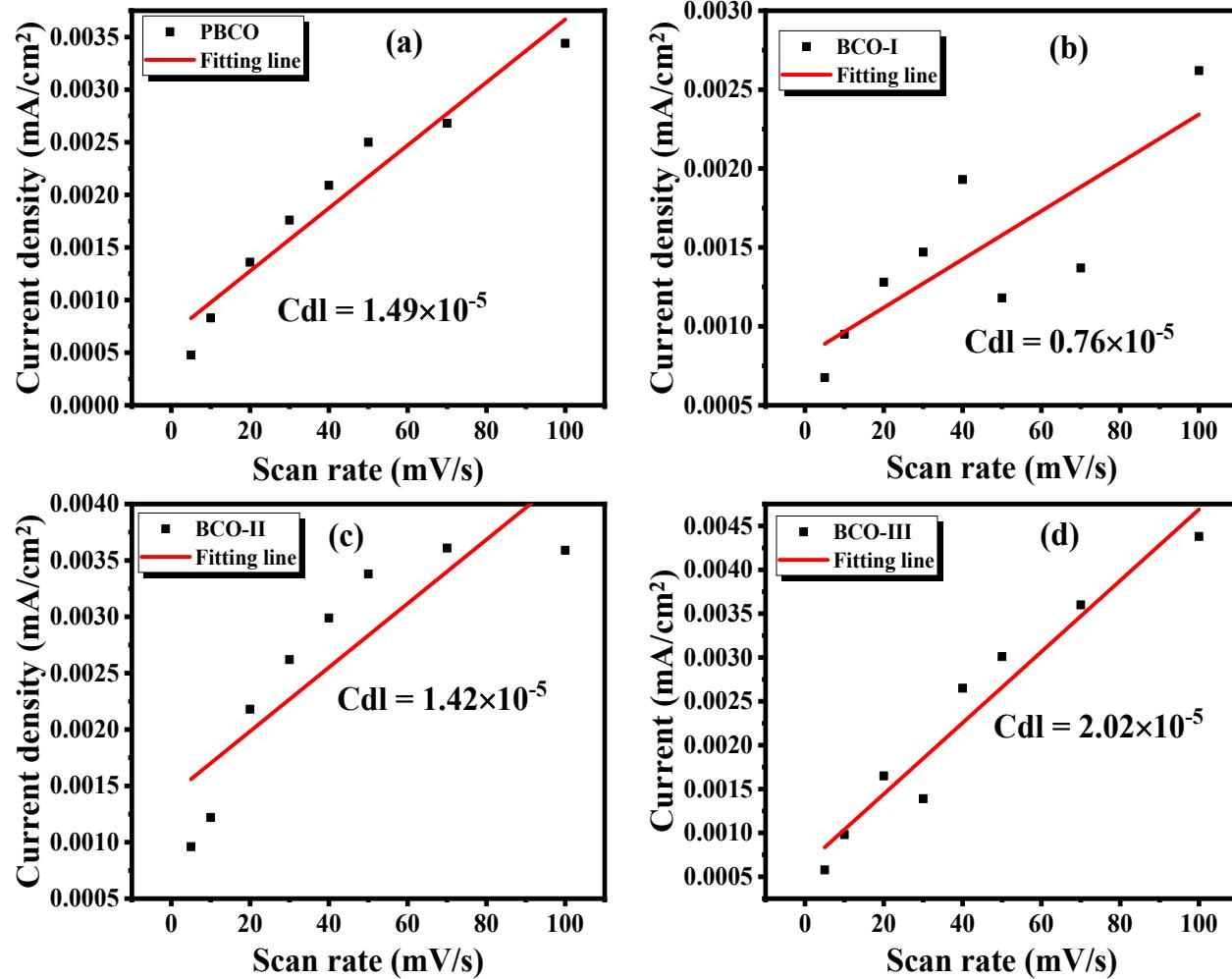


Fig. S1(a-d) Average current density ($\Delta J = (J_a - J_c)/2$) against the scan rate showing the double-layer capacitance extracted from corresponding CVs for all samples.

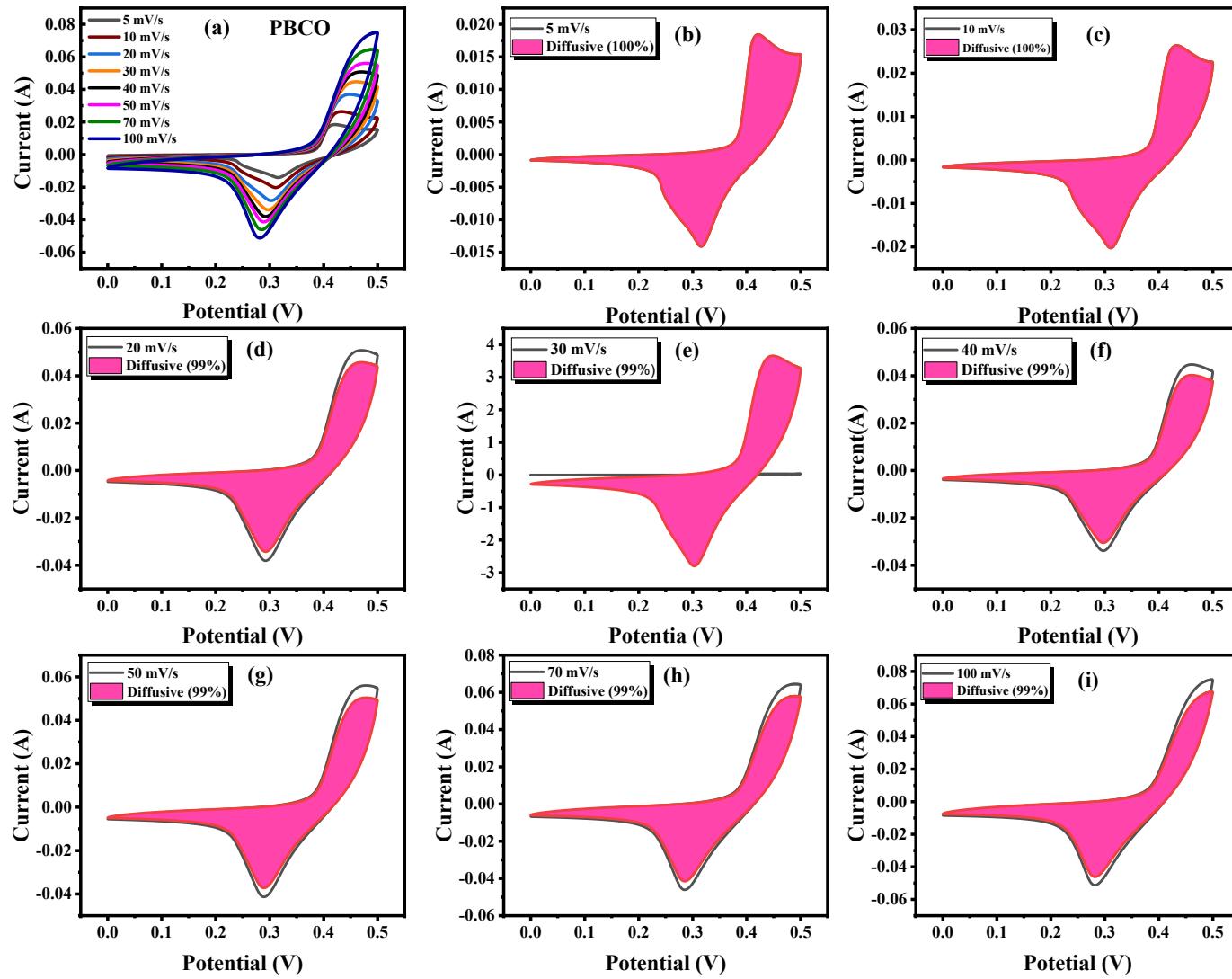


Fig. S2 **(a)** Curves at different scan rates of BaCoO₃ and **(b-i)** diffusion-controlled contributions of BaCoO₃ at different scan rates.

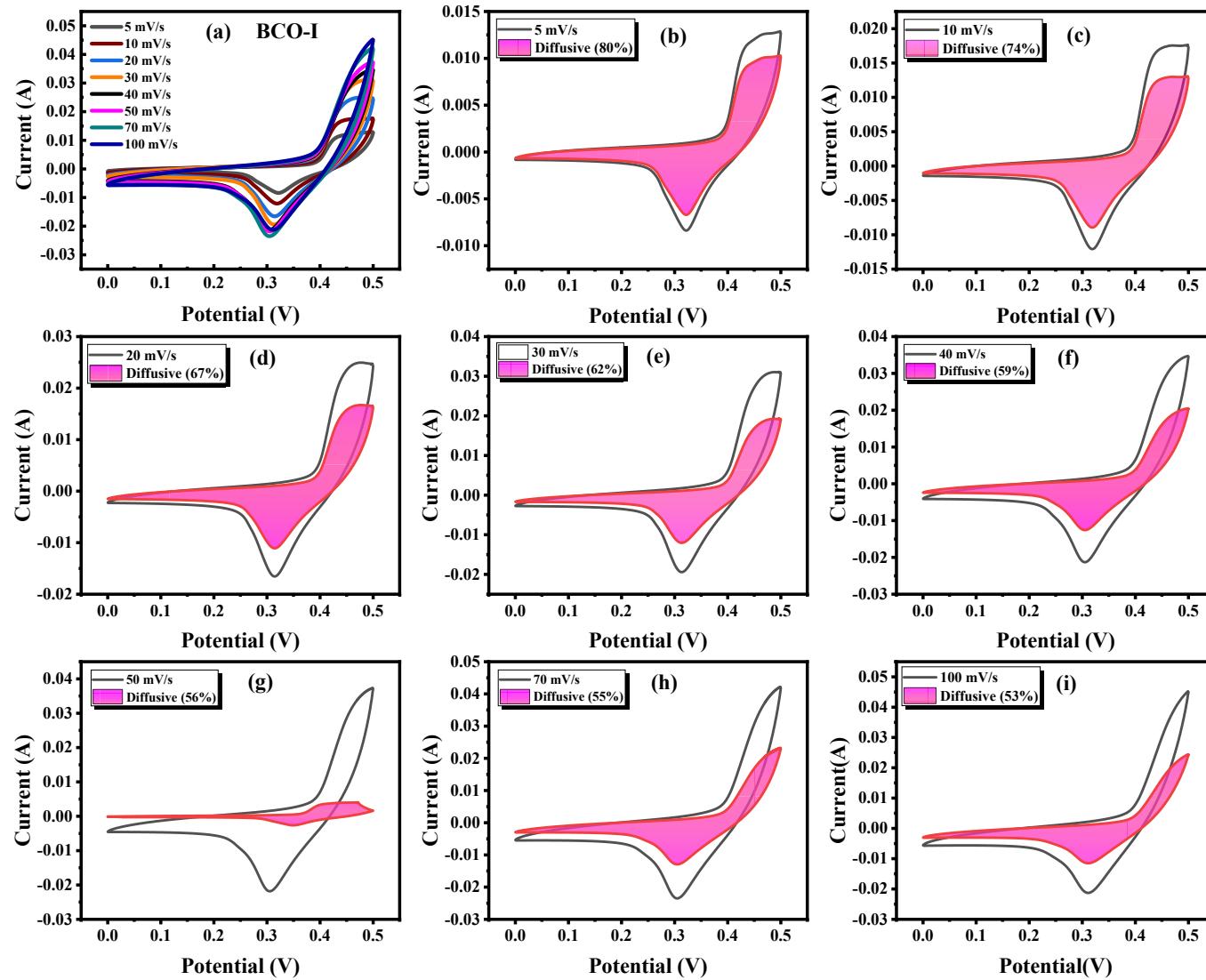


Fig. S3 (a) Curves at different scan rates of BaCoO_3 /5%rGO and (b-i) diffusion-controlled contributions at different scan rates.

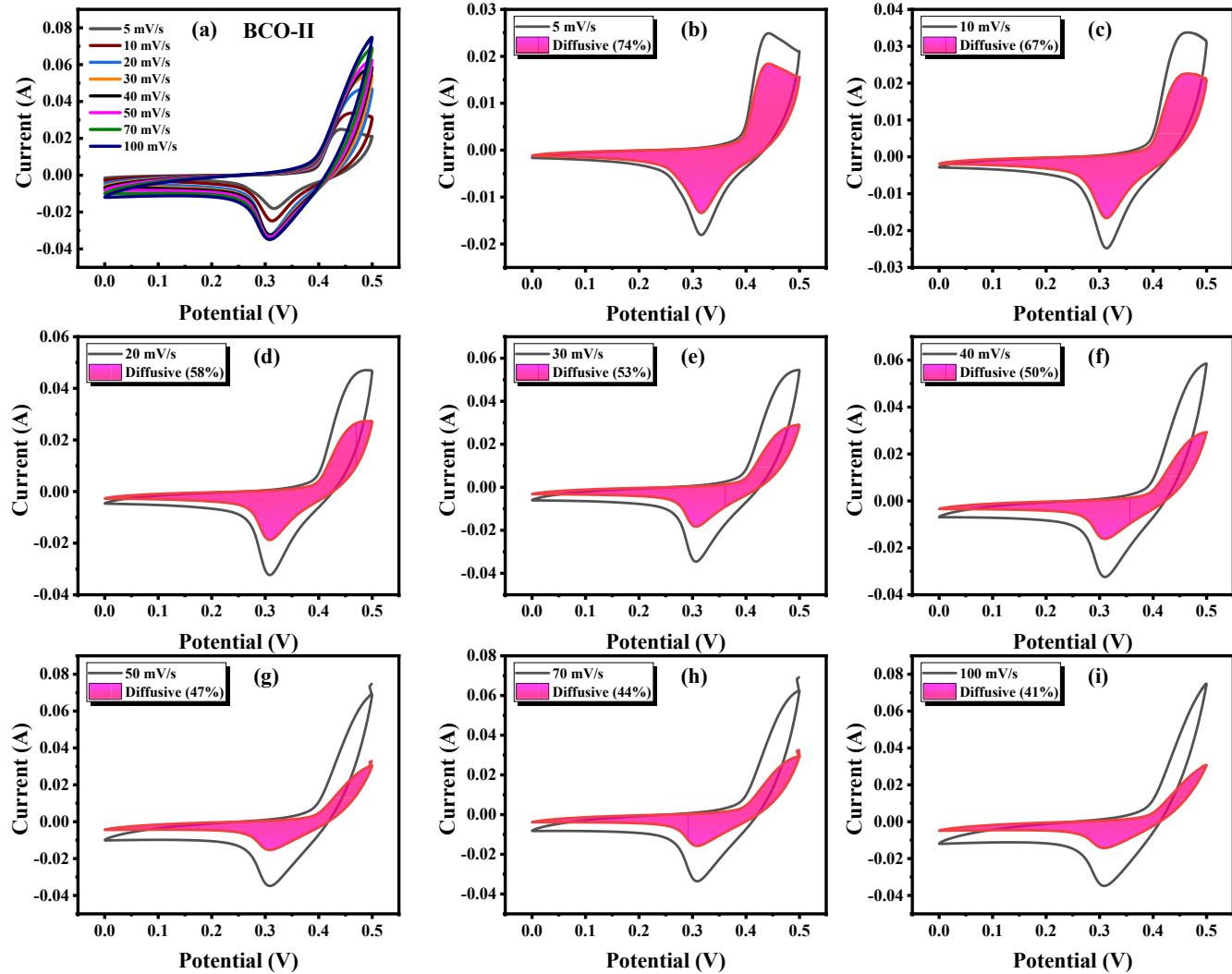


Fig. S4 **(a)** Curves at different scan rates of BaCoO₃/10%rGO and **(b-i)** diffusion-controlled contributions at different scan rates.

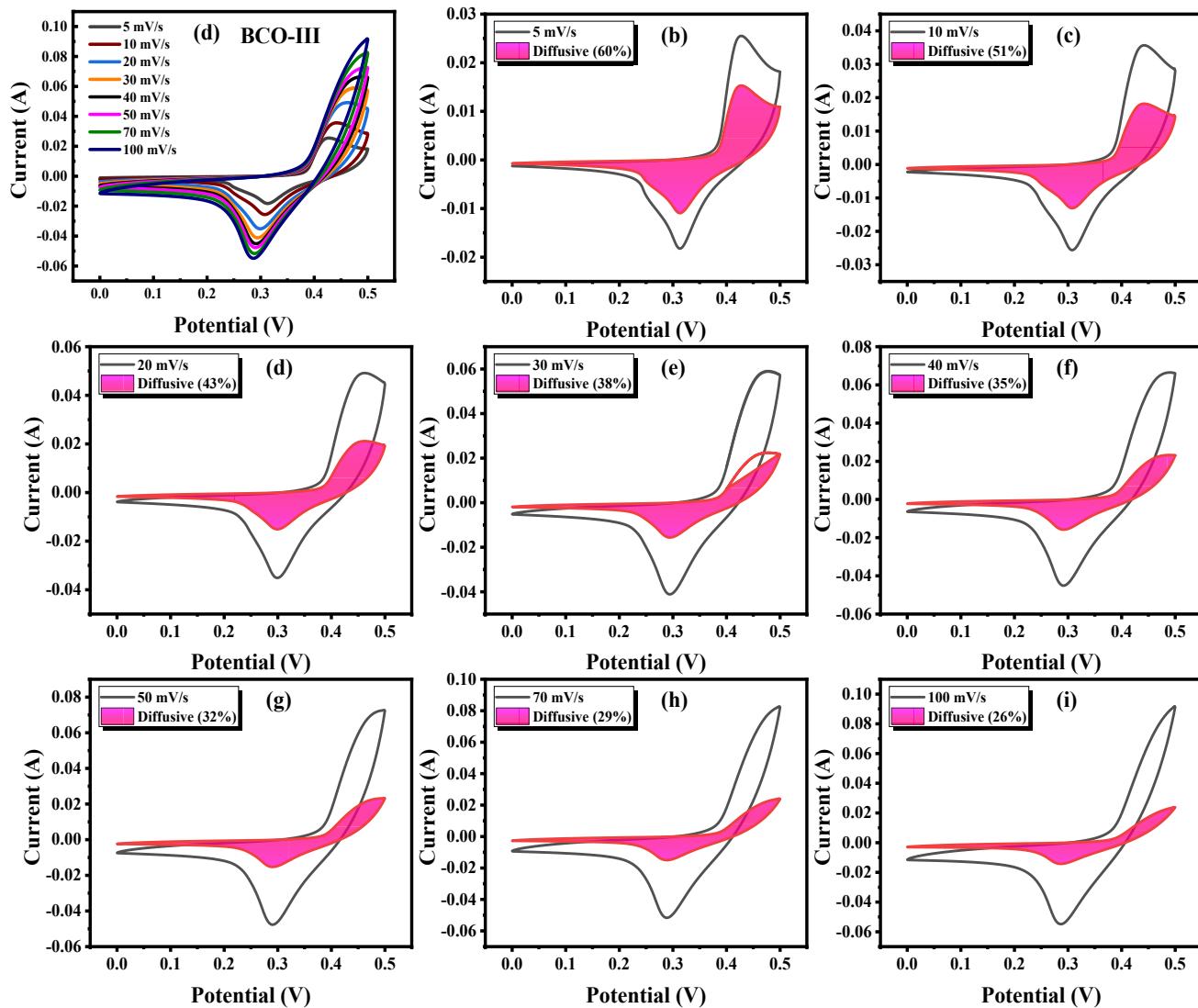


Fig. S5 (a) Curves at different scan rates of BaCoO₃/15%orGO and (b-i) diffusion-controlled contributions at different scan rates.

Table S1. Elemental composition of $\text{Sr}_{1-x}\text{Ba}_x\text{CoO}_3$

$\text{Sr}_{1-x}\text{Ba}_x\text{CoO}_3$ $x =$	Mol % C	Mol % O	Mol % Co	Mol % Sr	Mol % Ba	Mol % Au
0.0	9.39	24.85	50.35	14.35	0.0	1.07
0.33	26.12	49.28	10.81	7.88	5.30	0.62
0.67	27.41	50.39	6.99	3.96	10.68	0.57
1.0	28.54	49.61	6.68	0.0	14.61	0.56

Table S2. Parameters obtained from BET analysis for all samples

Sample	SSA [m²/g]	TPV [CM³/G]
PBCO	4.97 ± 0.02	0.004
BCO-I	9.37 ± 0.03	0.010
BCO-II	8.61 ± 0.02	0.009
BCO-III	11.64 ± 0.01	0.019