

## Supporting Information

### Hysteresis Abated P2-type NaCoO<sub>2</sub> Cathode Reveals Highly Reversible Multiple Phase Transitions for High-Rate Sodium-ion Batteries

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Figure S1

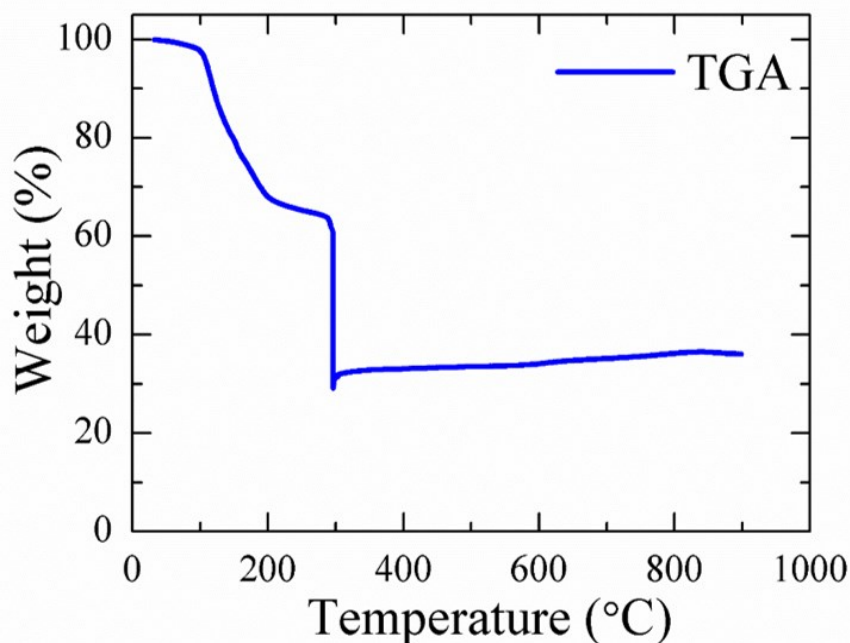


Figure S1. TG analysis for NaCoO<sub>2</sub> precursor.

**Table S1** Comparative study of crystal system parameters of NaCoO<sub>2</sub>.

Sample Details	Unit cell parameters Calculated		Unit cell parameters from JCPDS File		JCPDS file number
	<i>a</i> (Å)	<i>c</i> (Å)	<i>a</i> (Å)	<i>c</i> (Å)	
A1	2.8260	10.9230	2.8330	10.8800	00-030-1182
A2	2.8269	10.9323	2.8330	10.8800	00-030-1182
A3	2.8244	10.9135	2.8330	10.8800	00-030-1182
A4	2.8223	10.9124	2.8330	10.8800	00-030-1182
A5	2.8320	10.9731	2.8330	10.8800	00-030-1182
A7	2.8282	10.9506	2.8330	10.8800	00-030-1182

**Table S2** Raman active vibration modes of NaCoO<sub>2</sub>.

S. No	Active modes	Raman active vibration modes (cm <sup>-1</sup> )					
		A1	A2	A3	A4	A5	A7
1	E <sub>1g</sub> (O)	189	187	185	183	187	187
2	E <sub>2g</sub> (O)	466	462	460	462	460	462
3	E <sub>2g</sub> (Na)	511	507	510	508	513	509
4	E <sub>2g</sub> (Na)	607	607	609	608	607	608
5	A <sub>1g</sub> (O)	666	666	674	671	664	663

**Table S3** Comparative discharge performance of NaCoO<sub>2</sub>.

Sample	Average discharge capacity after 10 cycles(mAh/g)							Discharge capacity retention at 0.1 C rate (mAh/g)
	0.1 C	0.2 C	0.5 C	1 C	2 C	3 C	5 C	
A1	76	74	71	70	60	53	49	74
A2	90	89	82	73	68	64	52	90
A3	80	73	70	68	60	50	40	78
A4	82	77	72	69	61	50	41	79
A5	83	83	78	70	64	58	44	80
A7	100	99	93	90	83	75	69	98