Supplementary Materials: The New Method of XRD Measurement of the Degree of Disorder for Anode Coke Material

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1. Calculation Procedure of *P* (Take P_2 as Example)

The follow equation can be used to calculate P_2 (degree of disorder)

$$\frac{\beta_{101}\cos\theta_{101}}{\lambda} = \frac{0.89}{\overline{D}} + \frac{\cos\phi_{Z101}}{2c}\frac{\cos\theta_{101}}{\lambda}P \quad \text{(S1)}$$

That is,

$$P_2 = \left(\frac{\beta_{101}\cos\theta_{101}}{\lambda} - \frac{0.89}{\overline{D}_{112}}\right)/\left(\frac{\cos\phi_{Z101}}{2c}\frac{\cos\theta_{101}}{\lambda}\right) \quad \text{(S2)}$$

where λ = 1.54184, $\cos\phi_{Z101}$ = 0.2194, c = 6.078, then

$$P_2 = \left(\frac{\beta_{101}\cos\theta_{101}}{1.54184} - \frac{0.89}{\overline{D}_{112}}\right)/\left(\frac{0.2195}{2\times 6.078}\times\frac{\cos\theta_{101}}{1.54184}\right) \quad \text{(S3)}$$

Please pay more attention to unit conversion, where unit of D_{112} must change from nm to Å, the calculation results show in Table 1 below.

Table S1. The parameters and the results of calculations.

Categories	β (RAD × 10^{-3})	$2\theta_{101}$ (°)	D_{112} (nm)	*P*
PC22	22.846	44.276	8.647	0.316
PC24	21.869	44.212	8.788	0.278
PC26	18.448	44.301	10.325	0.227
PC28	15.411	44.337	12.479	0.196
TC20	73.758	44.031	2.254	0.448
TC22	29.007	44.212	6.151	0.273
TC24	21.590	44.287	8.339	0.212
TC26	18.605	44.288	9.802	0.193
TC28	17.000	44.306	10.812	0.183

2. Specific Capacity of Each Category and the First Charge-Discharge Voltage Profiles

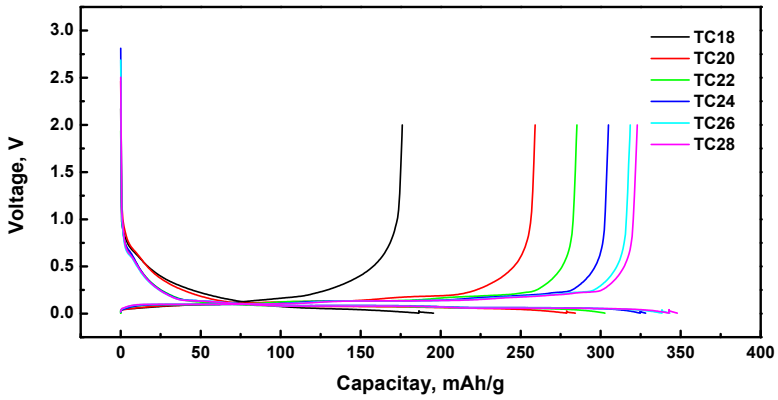

Figure S1. 1st charge-discharge voltage vs. specific capacity profile for each category.