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A Kinetic Study of the Phase Conversion of Layered Cobalt Hydroxides

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Sharp-Hancock analysis gives single straight lines for dependences ln(-ln(1-α)) *vs.* ln(*t*) over the course of reaction within the range $0.15 < \alpha < 0.85$, indicative of conformation to the Avrami-Erofe'ev formalism.

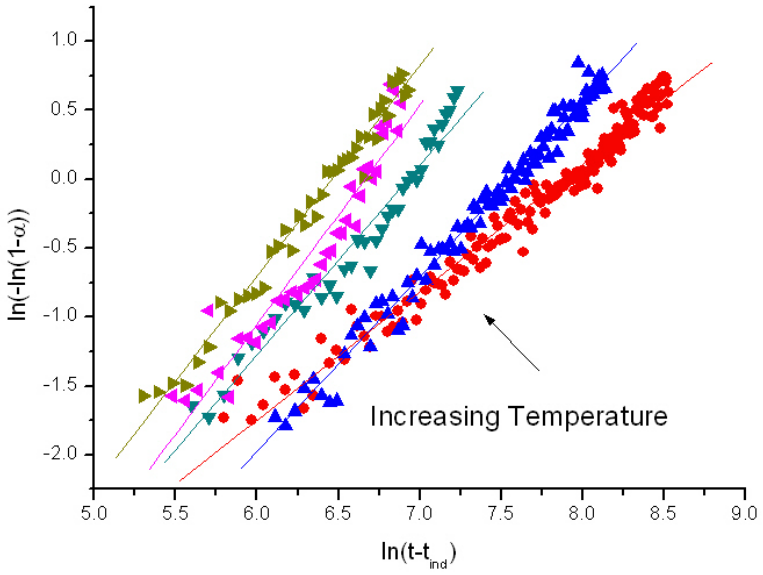

Figure S1. Sharp-Hancock plot for the phase conversion from (**1**) to (**4**) at 40℃ (red circles), 50℃ (blue triangles), 60℃ (dark cyan triangles), 70℃ (pink triangles), and 80℃ (dark yellow triangles). The data have been fitted with Avrami-Erofe'ev equation correspondingly.

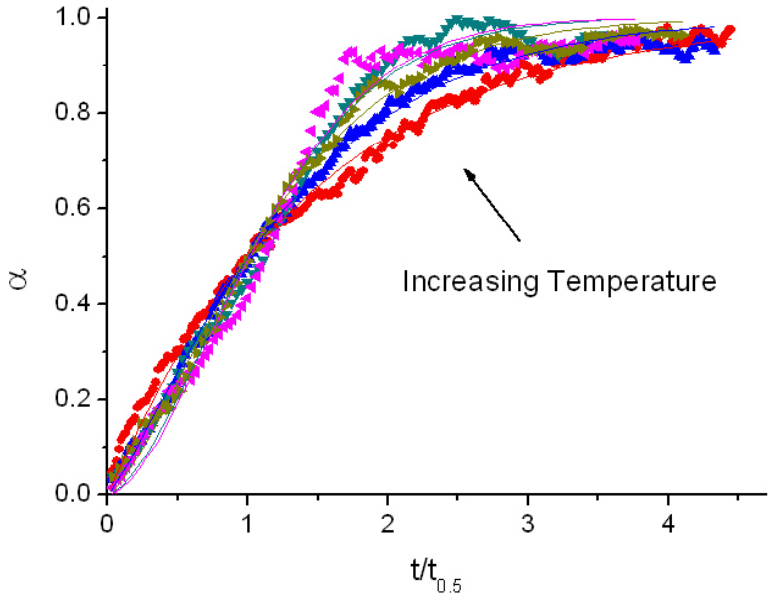

Figure S2. Extent of reaction (α) plotted against reduced time ($t/t_{0.5}$) for the phase conversion from (**1**) to (**4**) at 40℃ (red circles), 50℃ (blue triangles), 60℃ (dark cyan triangles), 70℃ (pink triangles), and 80℃ (dark yellow triangles). The data have been fitted with Avrami-Erofe'ev equation correspondingly.

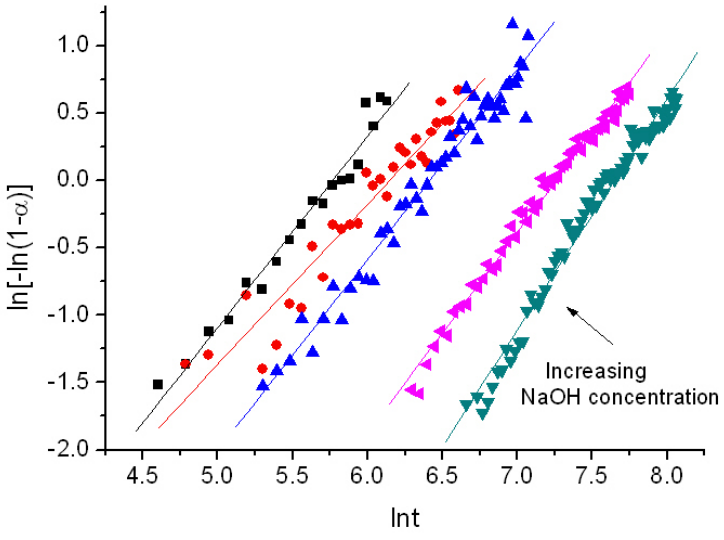

Figure S3. Sharp-Hancock plot for the phase conversion from (**1**) to (**4**) under different concentration of NaOH at 60℃: 0.125M (dark cyan triangles), 0.25M (pink triangles), 0.5M (blue triangles), 1M (red circles) and 2M (black squares). The data have been fitted with Avrami-Erofe'ev equation.

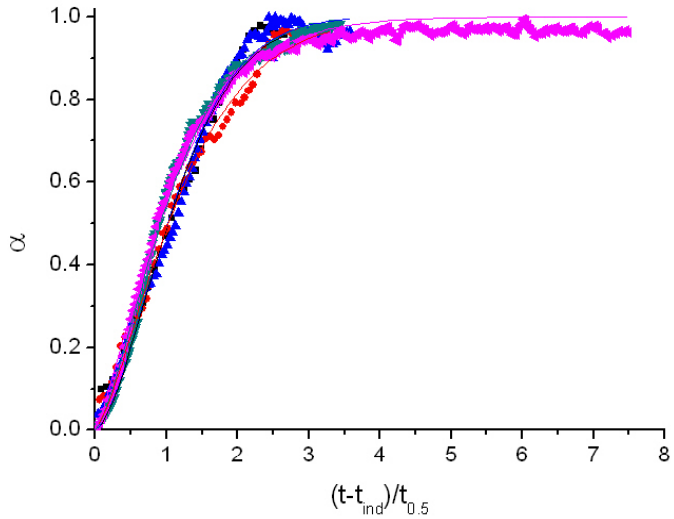

Figure S4. Extent of reaction plotted against reduced time ($(t-t_{ind})/t_{0.5}$) for the phase conversion from (**1**) to (**4**) under different concentration of NaOH at 60℃: 0.125M (dark cyan triangles), 0.25M (pink triangles), 0.5M (blue triangles), 1M (red circles) and 2M (black squares). The data have been fitted with Avrami-Erofe'ev equation.

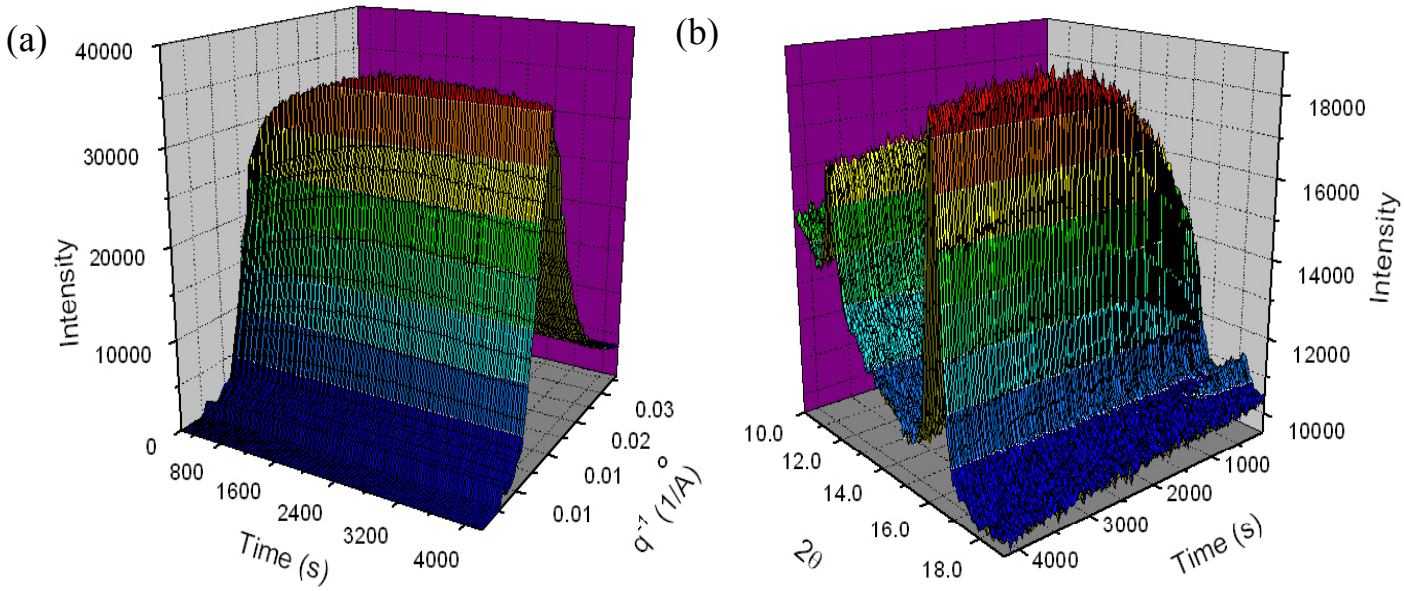

Figure S5. (a) *In-situ* SAXS data: 3D stack plot showing the evolution of the intensity observed in SAXS; (b) In situ WAXS data: 3D stack plot showing the intensity evolution of (**4**)'s 100 (d = 2.75 Å), 101 (d = 2.38 Å).

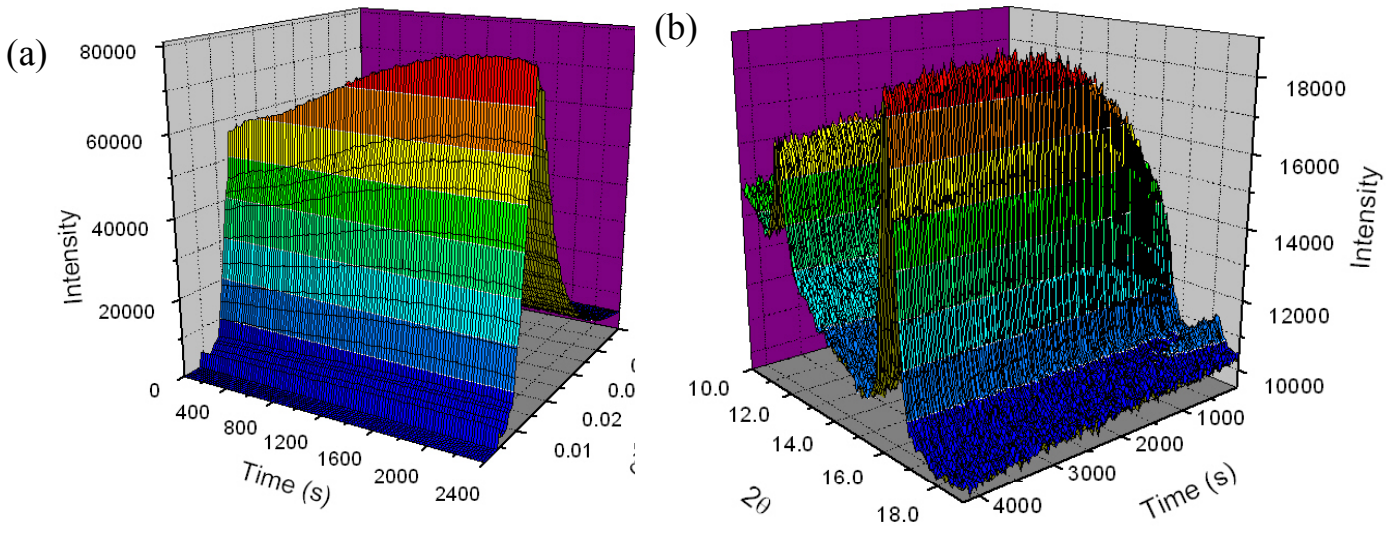

Figure S6. (a) *In-situ* SAXS data; (b) *In-situ* WAXS data for the phase conversion reaction from (**2**) to (**4**).