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# Balancing crystallinity and specific surface area of metal-organic framework derived nickel hydroxide for high-performance supercapacitor

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**Abstract:** Crystallinity and surface areas play important roles on the energy storage performances of electroactive materials. Herein, a Ni-based metal-organic framework (**MCF-35**) is employed as the template to fabricate hierarchical Ni(OH)<sub>2</sub> for supercapacitor applications. By careful controlling of reaction time and pH of the reaction media, the crystallinity and surface areas of prepared Ni(OH)<sub>2</sub> could be tuned and an optimizing structure with balanced crystalline and surface area could be obtained. Such a structure offers high electrochemical active sites and efficient pathways for ion migration and electron transportation. Thus, a remarkable and excellent capacity of 250.6 mA·h·g<sup>-1</sup> (2255 F·g<sup>-1</sup>) at a current density of 0.5 A·g<sup>-1</sup> is achieved. Meanwhile, using active carbon and the optimized

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