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Unraveling the combined influence of Oxygen vacancies and functional pillared effect on scalable Ni-Co LDH based high performance supercapacitor electrode materials properties

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The increasing environmental challenges such as the rise of global warming and the depletion of fossil fuels triggered the in studying various clean energy technologies. Such, including fuel cells, solar, wind, geothermal and tidal power. The energy produced by these systems requires an energy storage device, for the energy to be used over a long period. Modern energy storage devices include supercapacitors Lithium-ion batteries and molten salt, just to mention a few. Amongst them, the supercapacitors have the highest energy density, long lifespan and allow safe operation.

In the present study, we have developed electrode material for supercapacitors by combining both the pillar effect and oxygen vacancies via strategic annealing temperature of scalable NiCo-LDH resulting to the enhancement of supercapacitors performance.

the as-obtained NiCo-LDH was successfully synthesized, having the diffraction peaks centered at 12.28°, 24.67°, 33°, 36.41° and 59°. The peaks were assigned relative to the standard card (JCPDS no. 14-0191), and corresponded to (003), (006), (009), (012) and (110) plane of hydrotalcite- like LDH.

Apply to be
 considered for a student
   award (Yes / No)?

no

Level for award
 (Hons, MSc,
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no

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