Cover Profile
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Shape-Induced Kinetics Enhancement in Layered P2-$Na_{0.67}Ni_{0.33}Mn_{0.67}O_2$ Porous Microcuboids Enables High Energy/Power Sodium-Ion Full Battery


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Invited for this month's cover picture is the group of Genqiang Zhang. The cover picture shows unique one-dimensional P2-type $Na_{0.67}Ni_{0.33}Mn_{0.67}O_2$ porous microcuboids cathode for Na-ion battery achieving high energy/power densities. Read the full text of the Communication at 10.1002/batt.202000226.

What is the most significant result of this study?

In this study, we present that the cyclic stability and power performance of the cathode can be improved by properly designing the material with well exposed sodium ion active crystallographic plane and porous structure.

What prompted you to investigate this topic/problem?

We realize that sodium-ion batteries have a wide range of applications, including large-scale energy storage devices, electric vehicles, portable home energy storage devices, and electric boats, etc. All of these potential applications require batteries with excellent cyclic performance and high power/energy densities.

What aspects of this project do you find most exciting?

In this project, the most exciting find is that the exposed {010} crystallographic plane families, the Na-ion active crystallographic plane, could well improve the Na-ion diffusion kinetics and promote the power density.

What future opportunities do you see (in the light of the results presented in this paper)?

This work provides a new avenue for designing cathode materials with excellent cyclic stability and high power density. We believe that the power density of the cathode regarding the Na-ion battery and even Li-ion battery can be further improved through reasonable design with more active crystallographic planes exposed, which is expected to be used in high power devices for various practical applications in future.