

Mxene- $\text{NaTi}_2(\text{PO}_4)_3$ composite for battery-type anode of sodium-ion capacitor

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As the industry using electrical energy develops rapidly, the development of energy storage systems is urged. Sodium-ion capacitors (SICs) receive a lot of attention because they use sodium, a relatively inexpensive resource, and have high energy and power. In particular, the study of battery-type materials is necessary because of the poor rate characteristics and lifespan. In this study, a Mxene- $\text{NaTi}_2(\text{PO}_4)_3$ (NIP) composite was made and used as an anode of SICs. This composite was formed by growing NIP, having poor electrical conductivity, on the surface of Mxene having a 2D structure and high electrical conductivity. Through the evaluation of the electrochemical performance, it was confirmed that the composite not only showed a better rate performance but also had stability. This is expected to be due to the synergistic effect of the Pseudocapacitive characteristics of Mxene and the battery characteristics of NIP.