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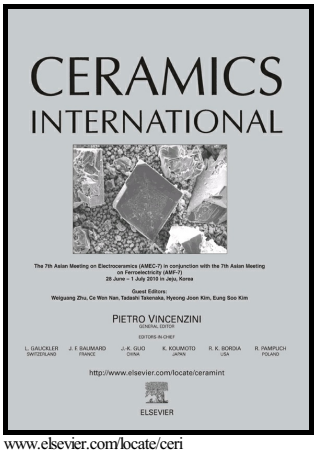

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Synthesis and properties of 2D-Titanium carbide MXene sheets towards electrochemical energy storage applications

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Abstract

The cult MAX phases and MXenes has been a point of an attractive new family of 2D materials for diverse applications. In the present work, titanium carbide MXene sheets have been prepared by etching aluminum from titanium aluminium carbide MAX phase. The sample was investigated by X-Ray diffraction, FESEM, TEM and RAMAN analysis. XRD analysis revealed that the synthesized MXenes were formed in hexagonal crystal system and FE-SEM analysis showed that titanium carbide sheets were exfoliated. Raman analysis showed that the lower modes, which correspond to the "A" phase, disappeared due to the removal of aluminium. The electrochemical performance of the synthesized MXenes towards supercapacitor applications was further investigated using various electrochemical techniques