日本材料技研株式会社
Japan Material Technologies Corporation

Ti_3C_2 MXene

– Conductive two-dimensional material –

Product	Ti_3C_2 MXene is a layered material with thickness of a few atoms
Application	Electrode materials for battery and capacitor, sensor, electromagnetic shielding material
Feature	High electrical conductivity, dispersibility, electromagnetic shielding efficiency and capacitance

PRODUCT OVERVIEW

MXenes are a class of two-dimensional transition metal carbides, nitrides, or carbonitrides with thickness of a few atoms. They have the formula $M_{n+1}X_n$, where M is a transition metal (e.g., Ti, V, Nb), and X is C, N, or both. Ti_3C_2 has been the most studied MXene.
Because of their nanosheet structure, high electrical conductivity and dispersibility, MXenes are considered for various applications such as active materials and conductive additives for rechargeable battery, electromagnetic shielding materials, conductive films, and sensor materials.
MXene's surface hydrophilicity makes it highly compatible with solution processes.

We have the non-exclusive patent license agreement with Drexel university.

Molecular Formula	$Ti_3C_2T_x$ (T: O, H, F)
Name	Ti_3C_2 MXene
Average particle size	8.0 μm
Color	Black

＜SEM image＞

PRODUCT FEATURE

Electric conductivity
7,000 S/cm *

EM shielding
SE > 50 dB@10GHz
(t5um film)**

Capacitance
900 F/cm³ ***

* *ACS Nano* 2021, **15**, 4, 6420–6429
** *Nature* 2014, **516,** 78–81
*** *SCIENCE* 2020, **369**, 6502, 446-450

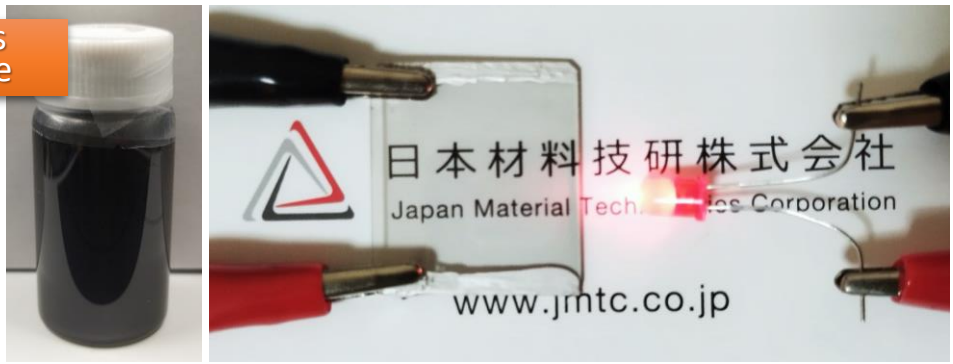
Contact information

Japan Material Technologies Corporation
2-3-4 Nihonbashi-Honcho, Chuo-ku Tokyo
www.jmtc.co.jp/en/

For Thin Film Applications

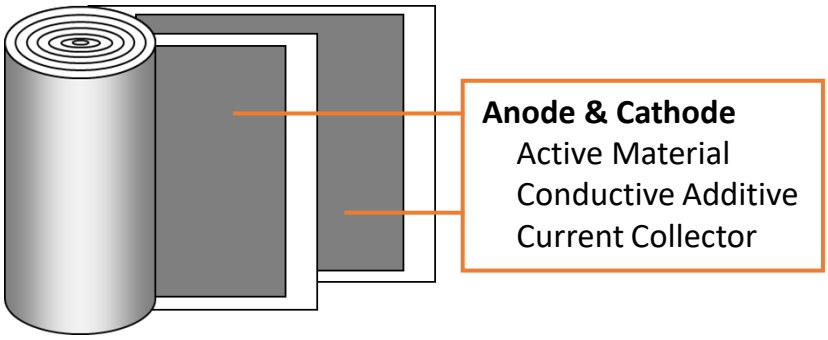
Ti_3C_2 MXene can be dispersed and applied to form a transparent conductive film through solution process.

Samples Available



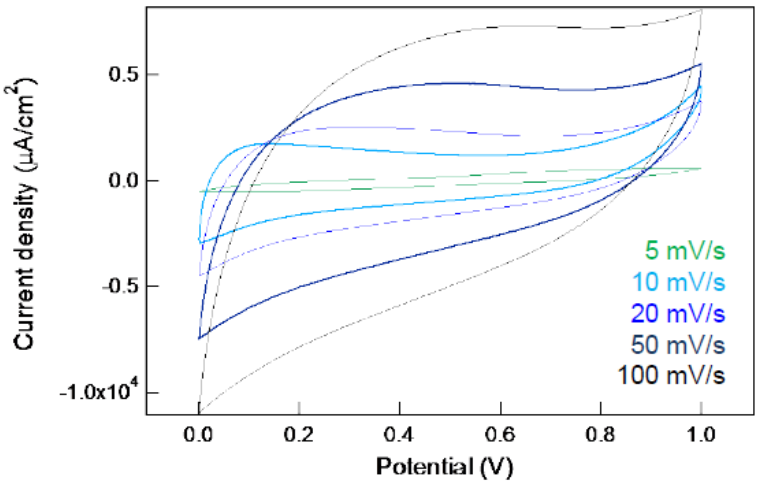
For Rechargeable Batteries

MXenes can be used as an active material or a conductive additive in rechargeable batteries.

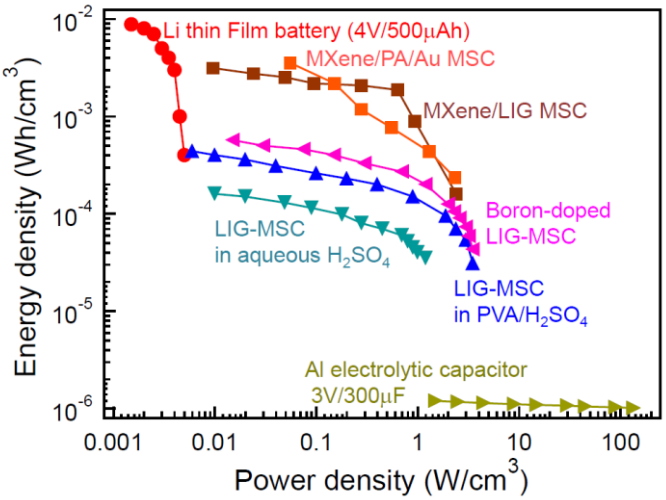


For Super-Capacitors

MXenes are available as an electrode for super capacitors. Micro supercapacitor using our Ti_3C_2 MXene has five times higher capacitance than those using carbon-based materials.



Cyclic voltammograms of Ti_3C_2 MXene-MSC



Ragone plot of Ti_3C_2 MXene- MSC

LPM2021

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