MOMENTUM MATERIALS®

Momentum Materials Solutions Corp.
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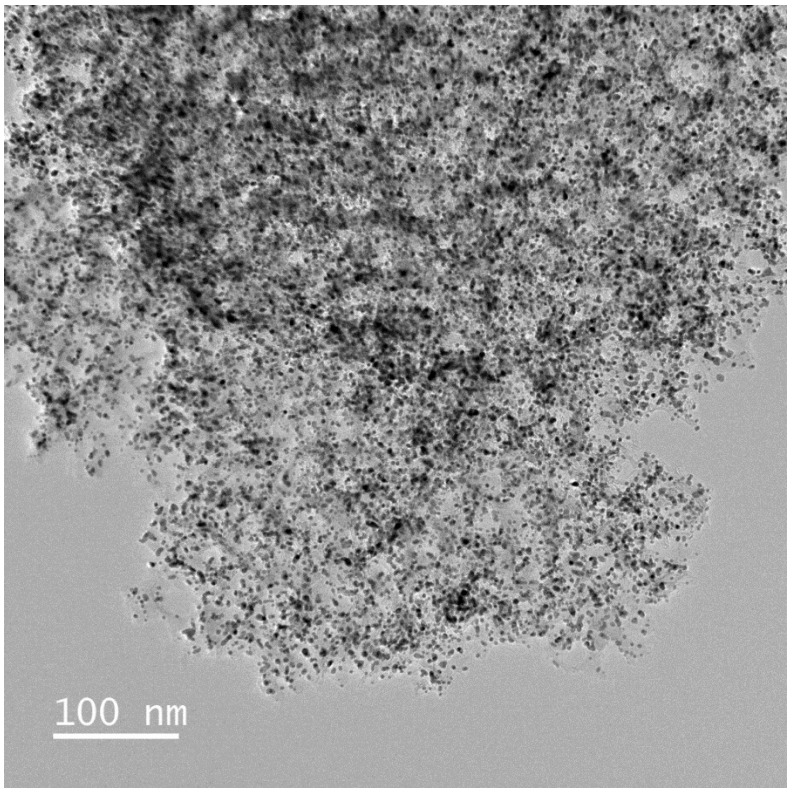
Pt/NCP Catalysts™

Product Introduction

This product is prepared using our company's globally pioneering **NCP Supports™** (nanoporous carbon powder). The unique structure of NCP Supports™ confines most Pt particles within the mesopores, effectively preventing agglomeration and detachment, while also minimizing ionomer poisoning to enhance catalytic efficiency.

The three-dimensionally interconnected nanoporous structure of NCP Supports™ creates efficient oxygen transport channels, enabling rapid oxygen delivery to the catalyst surface and reducing transport resistance. At the same time, this structure facilitates the removal of excess water, helping to suppress flooding during operation.

Product Appearance and Advantages



Advantages

- Scalable production with high consistency
- Free of heteroatom introduction during synthesis; contains negligible chloride ions

253147 Bearspaw Road, Calgary, AB, Canada T3L 2P5

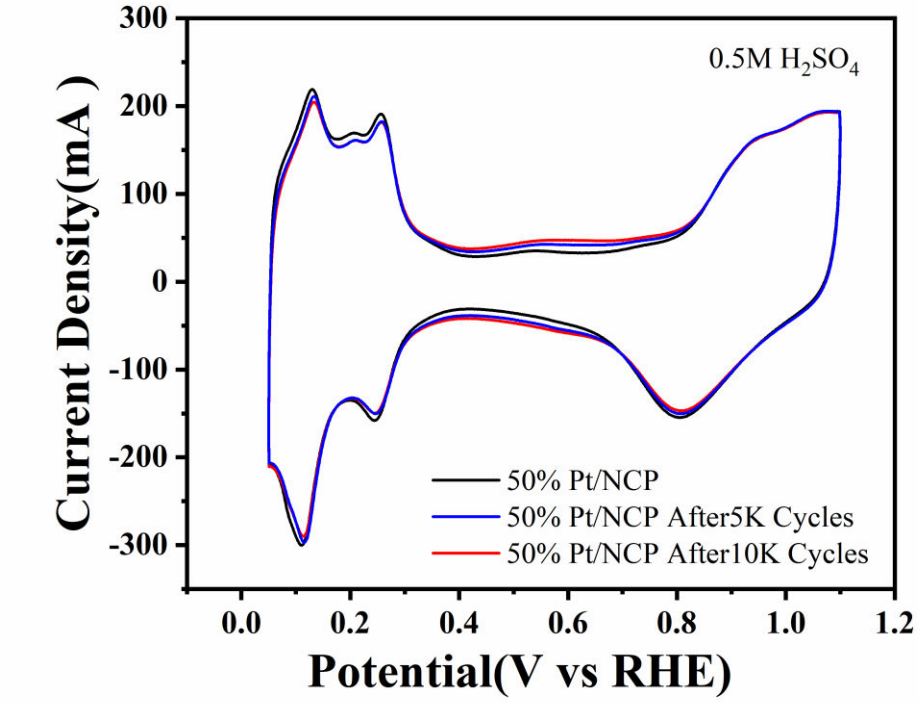
Main Models and Parameters

Model	Pt/NCP
Platinum content (%)	20-60
Catalyst support	NCP Supports™ (customizable)
Particle size (μm)	3-5
Electrochemical surface area (m^2/g)	40-100
Chloride ion content (ppm)	＜50

Catalyst Performance

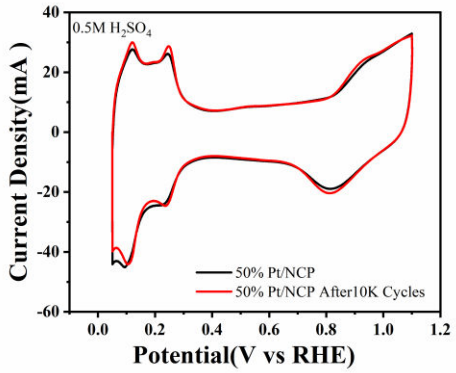
Carbon Durability In Three-Electrode Cell:

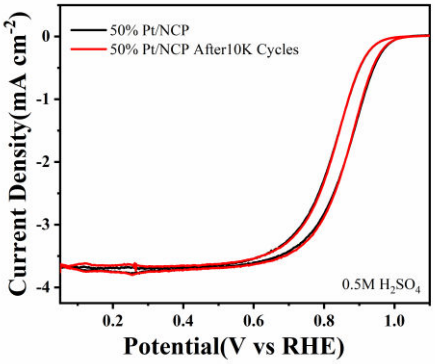
- 1-1.5V, 5000 cycles: electrochemical surface area (ECSA) loss ＜10%
- 10000 cycles: ECSA loss ＜15%



Catalyst Durability In Three-Electrode Cell:

- 0.6-0.95V, 100,000 cycles: neglectable changes in mass activity

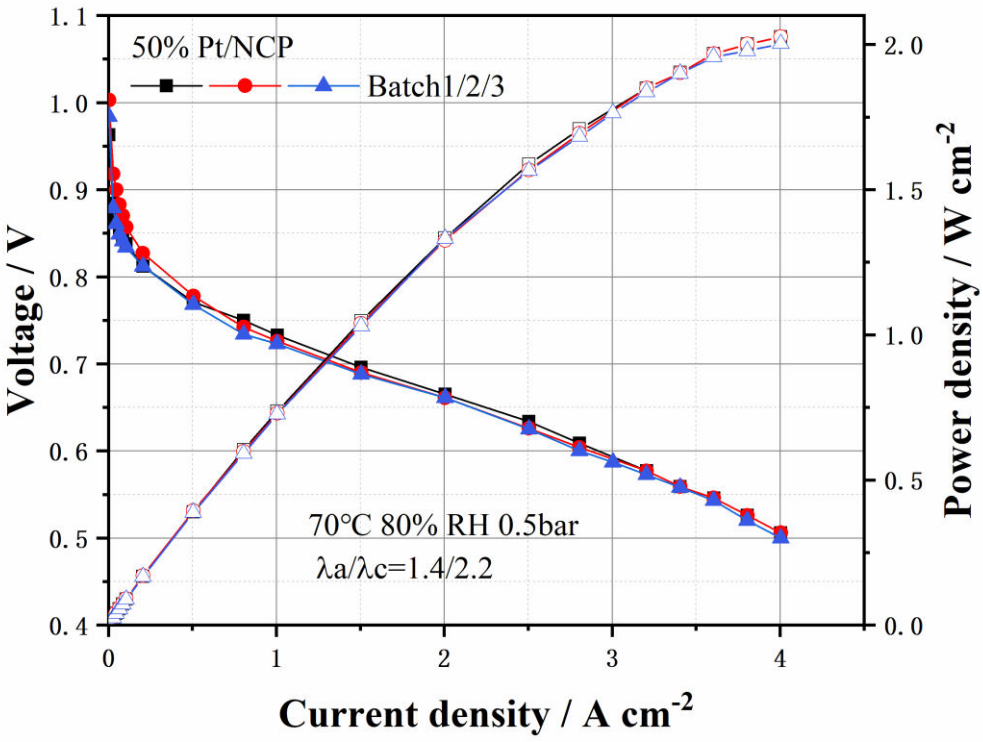




Membrane Electrode Assembly Performance:

Cathode loading: 0.3 mg_{Pt}/cm^2; Anode loading: 0.2 mg_{Pt}/cm^2

- MEA performance achieved 0.67 V at 2 A/cm²



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Features

- Ordered mesoporous carbon (NCP Supports™) support with a 3D interconnected nanocage structure; pore size is ordered and tunable.
- Optional graphitization treatment; heat-treated NCP-HT support offers higher stability and extended catalyst lifetime.
- Small particle size, uniform particle distribution, and high stability.
- Excellent durability: <10% ECSA loss after >5,000 cycles at 1–1.5 V.
- Superior MEA performance: H_2/air fuel cells reach 1.3 W·cm^{-2} at 0.65 V.

Application Areas

- PEM fuel cells
- Hydrogen evolution catalyst for water electrolysis
- Methanol/formic acid fuel cells