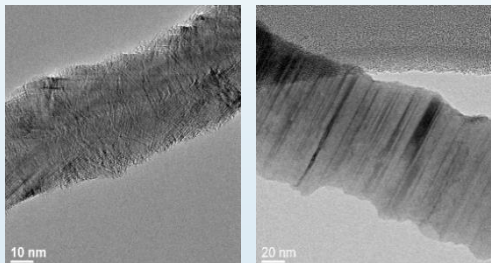
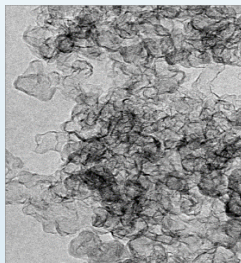


CATALYST SUPPORT

Carbon Nanofiber type



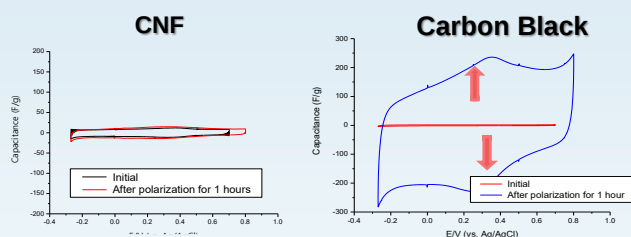
Sphere type



VINATech's Catalyst Support

- fibrous carbon
- high electrical conductivity
- high anticorrosion
- catalyst on edge

Comparison with Carbon Black

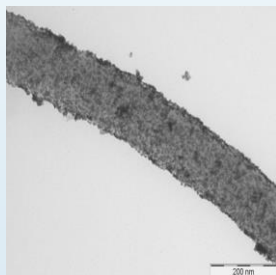


High Anti-Corrosion : CNF >> Carbon Black

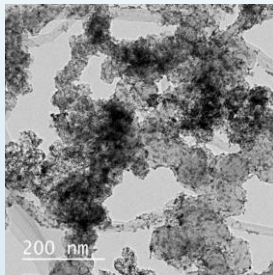
Type	Microscopic Pictures	Forming Structures
PCNF		
HCNF		
TCNF		

CATALYST

Carbon Nanofiber type



Sphere type

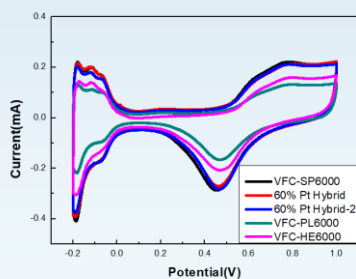


Catalyst

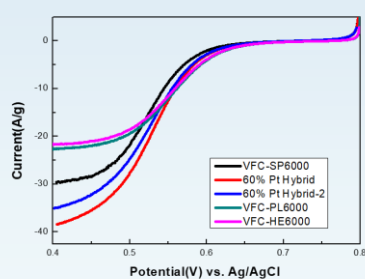
Catalyst	ESA	Particle
VFC-HE6000	30~45m ² /g	2.5~3nm
VFC-SP6000	50~60m ² /g	2.5~3nm

Performance

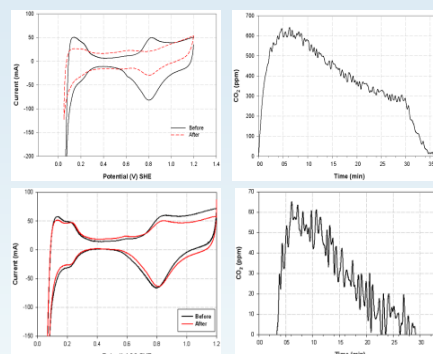
ECSA(electrochemical surface area)



ORR(Oxygen reduction reaction)



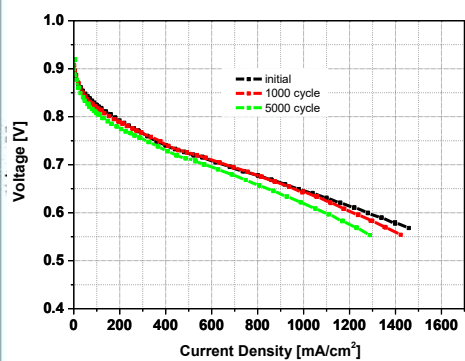
Acceleration holding test



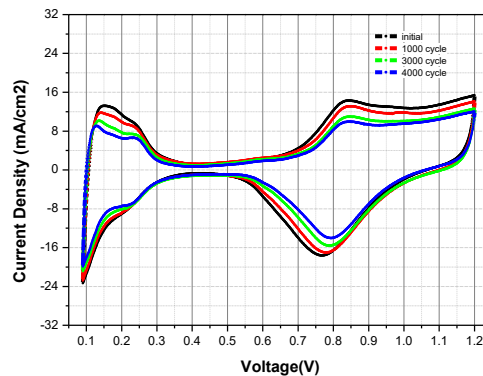
**low decrease performance & ECSA
low production CO₂**

MEA PERFORMANCE & CATALYST CORROSION

Performance



Accelerated Corrosion Test



High
Anti-Corrosion

High
Surface Area

Sample Products

PEMFC



25cm² (3 layer)



360cm² (5 layer)



360cm² (7 layer)

DMFC



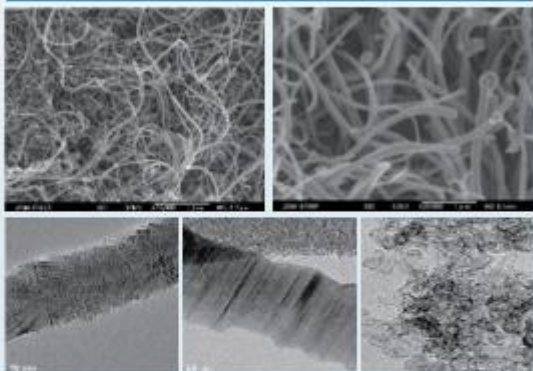
220cm² (5 layer)

We can provide customized product for customers.

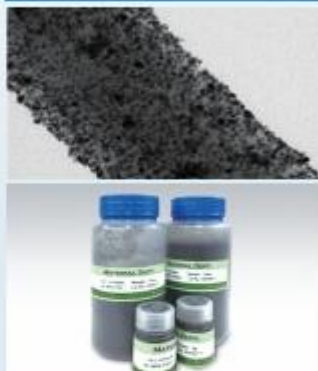
(Change size and material, Electrode and MEA property control, and so on)

FUEL CELL PRODUCT VALUE CHAIN

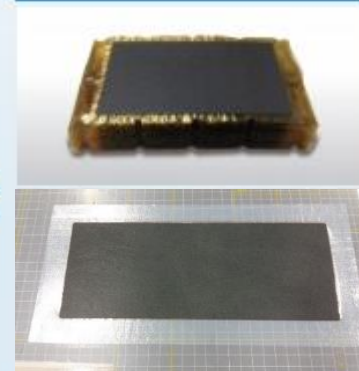
Catalyst Support



Catalyst



MEA



CNF Catalyst Support

- Fibrous Carbon
- High Electrical Conductivity
- High Anti-Corrosion

Fuel Cell
Product
Value Chain

VFC Catalyst

- Long Performance Duration
- High Electro Chemical Surface Area
- High Conductivity