



PLATINUM BASED ELECTROCATALYSTS FOR FUEL CELLS

Centre for Fuel Cell Technology

International Advanced Research Centre for Powder Metallurgy and New Materials

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Overview

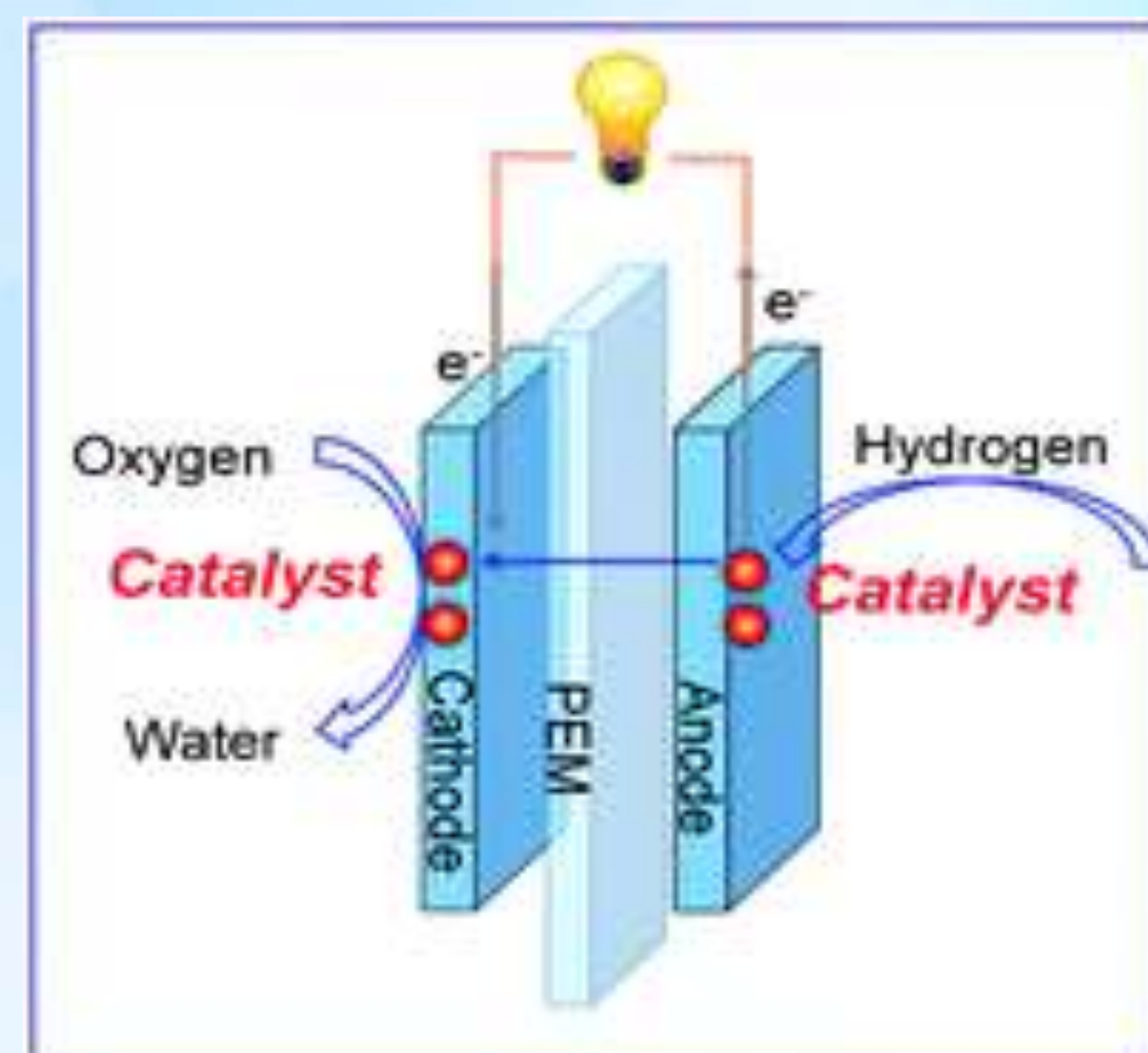
Platinum (Pt) based electrocatalyst materials have attracted extensive attention as an ideal fuel cell catalyst due to their most outstanding activity for both oxygen reduction reactions (ORRs) and hydrogen oxidation reactions (HORs). Pt is termed to be the most efficient and stable single-metal electrocatalyst for fuel cells, as it increases the electrocatalyst activity in the fuel cell and thereby meeting the performance targets. ARCI has developed Pt based electrocatalysts which has the ability to enhance the performance and durability of fuel cell.

Key Features

- Pt based electrocatalysts can be prepared using an easily scalable method
- The electrocatalysts enables unique performance and better durability for fuel cell reactions (ORR, HOR)
- Tuneable particle size and surface area of electrocatalysts produced
- Better catalyst utilization and higher electro-catalytic activity
- The substrate material is functionalized to hold the Pt particles stronger. So both strength and durability is increased.

Technology Specifications

- Catalyst Name: 20% Pt on FAB (Functionalized acetylene black)
- Appearance: Black powder
- Moisture: ≤ 1.0 wt%
- Assay: 20.0-24.0% Pt
- Metal surface area: ≥ 93 m²/g
- Catalyst Particle Size (zeta Pot.): ~ 35 μ m
- Catalyst BET Surface Area: ~ 80 m²/g
- Metal Crystallite Size: ~ 3.0 nm



Platinum Electrocatalysts for Fuel Cell Applications



PEM Fuel Cell Stack Developed by ARCI

Technology Status

- The technology is ready for transfer

*Intellectual Property Development Indices

IPDI	1	2	3	4	5	6	7	8	9	10
Activities	Basic concepts and understanding of underlying scientific principles	Shortlisting possible applications	Research to prove technical feasibility for targeted application	Coupon level testing in stimulated conditions	Check repeatability/ consistency at coupon level	Prototype testing in real-life conditions	Check repeatability/ consistency at prototype level	Reassessing feasibility (IP, competition technology, commercial)	Initiate technology transfer	Support in stabilizing production
Status										