

HIGHLY STABLE PLATINUM ALLOY CATALYST FOR METHANOL ELECTROOXIDATION

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Description

PtRu alloy catalyst has been a state-of-the-art anodic catalyst for electro-oxidation in case of direct methanol fuel cells. However, this catalyst is associated with a common problem of metallic component dissolution which further results in severe detrimental effects such as decayed anodic activity and increased resistance. Many more efforts have been made to overcome this problem by using ternary and quaternary alloy nanoparticles such as PtRuNi and PtRuRhNi. However, the problem still persists. **This novel approach enables preparation of a structurally advanced and ultra-stable nanoparticle based catalyst for methanol electro-oxidation, overcoming most prior-art limitations.**

Value Proposition

The nanoparticle based catalyst:

- Comprises a core-shell structure containing alloys of Pt, Au & Ru, wherein Pt serves as catalyst, Ru prevents CO poisoning, and Au prevents dissolution of Pt and Ru
- Is much more efficient for electro-oxidation of methanol as compared to previously used ones
- Is prepared using sequential micro-emulsion method, which allows for a selective control over particle growth and size
- Would be commercially useful for an enhanced industrialization of direct-methanol fuel cells (promising energy source for portable devices)

Intellectual Property Status

Pending Utility Application 13/704,765

License Status

Available for license

