Tohoku Univ. Technology

Pt Silicide Nanoparticles

New catalyst with higher activity than commercial Pt/C catalyst

Overview

Current platinum (Pt) materials and alloys of Pt and other precious metals (Ni, Co, Pd, etc.) are used as fuel cell electrocatalysts. However, current materials are expensive. On the other hand, the activity efficiency of alloy made of Pt and inexpensive materials (such as carbon) was not enough for electrocatalysis.

The present invention focuses on alloy made of silicon (Si) and Pt by dry process. It can be solved above problems because Si has abundant reserves.

Furthermore, the developed alloy nanoparticles of Pt and Si shows 2.5 times more catalytic activity than commercially available Pt/C catalysts, and therefore it is expected to be alternative materials for fuel cell electrocatalysts.

Product Application

- Electrocatalytic materials for fuel cells ⇒ Reduction of amount of Pt and improvement of properties
- Electrode material for semiconductor device

Features・Outstandings

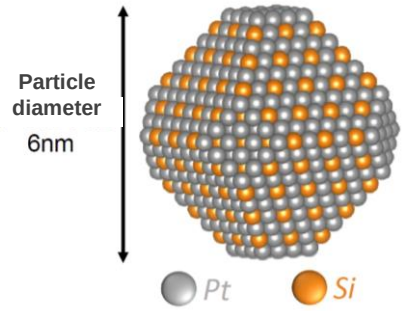

Fig. 1 Silicide particle image

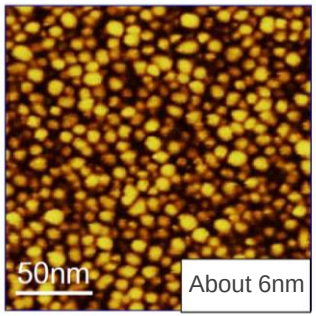

Fig. 2 Microscopic image

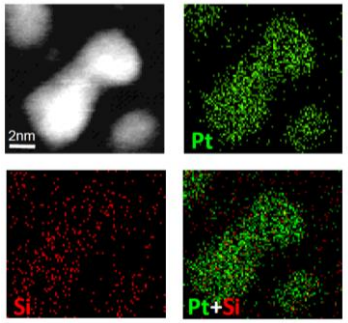

Fig. 3 EDX map

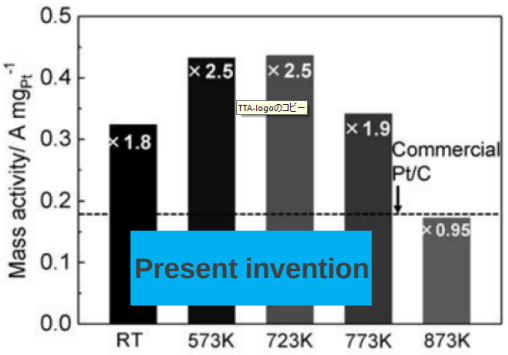

Fig. 4 Improvement of Sample Activity for Commercial Pt/C Catalysts by Fabrication Temperature

Pt Silicide Particles for Commercial Pt/C Catalysts showed up to 2.5 times more activity than commercial Pt/C catalysts

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