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Rahman, A., Ihsan, S., Momoud, A.

Palladium/Lathanum Cobaltite Catalyst Polymer Exchange Membrane Fuel Cell for Electric Vehicle
(2023) *Lecture Notes in Mechanical Engineering*, pp. 397-405.

DOI: 10.1007/978-981-19-9509-5_53

Department of Mechanical Engineering, Kulliyyah of Engineering, International Islamic University Malaysia, Kuala Lumpur, 53100, Malaysia

Abstract
An 100% battery-electric vehicle has a limited travel distance about 150–200 km and a battery life of about 5–6 years. A FC hybrid car has been demonstrated for the mileage about 500 km with a single full charge battery and 2 L of hydrogen. Currently available fuel cell materials (Platinum, Pt) appear to be adequate with a high-cost entry point, easily poisoned, fermented (forming alcohol), and gives off carbon monoxide (CO). The aim of this study is to develop a palladium (Pd)/lathanum cobaltite ($LaCoO_3$) catalyst polymer proton-exchange-membrane (PEM) FC for the cost reduction, prevents FC poisoning, fermantation and energy efficient. Furthermore, palladium a large volumetric quantity of H_2 absorption at room temperature and forms palladium hydride (PdH_x) could be an attraction for the FC technology development. Two-layers of Pd/$LaCoO_3$ catalyst will be fused as a catalyst by gas-diffusion technique for the FC'S anode and cathode. The polymer electrolyte membrane (PEM) will be fused together with the Pd/$LaCoO_3$ catalyst for FC model. It is expected that Pd/La/CoO3_PEM FC stack will improve efficiency of FC about 40% and generate open-circuit-voltage 0.9 V and closed-circuit-current 1A.

Author Keywords
Fuel cell; High efficient energy source; Pd/LaCoO3 Catalyst electrode

Index Keywords
Carbon monoxide, Catalyst poisoning, Cost reduction, Electrodes, Energy efficiency, Lanthanum compounds, Open circuit voltage, Palladium compounds, Platinum compounds, Polyelectrolytes, Solid electrolytes; Battery-electric vehicles, Catalyst-electrodes, Energy source, High efficient, High efficient energy source, Palladium/LaCoO3 catalyst electrode, Polymer exchange membrane fuel cells, Proton exchange membranes, Travel distance,]+ catalyst; Proton exchange membrane fuel cells (PEMFC)

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Correspondence Address
Rahman A.; Department of Mechanical Engineering, Malaysia; email: arat@iium.edu.my

Editors: Maleque M.A., Ahmad Azhar A.Z., Sarifuddin N., Syed Shaharuddin S.I., Mohd Ali A., Abdul Halim N.F.
Publisher: Springer Science and Business Media Deutschland GmbH

Conference name: 5th International Conference on Advances in Manufacturing and Materials Engineering, ICAMME 2022
Conference date: 9 August 2022 through 10 August 2022
Conference code: 294689

ISSN: 21954356
ISBN: 9789811995088
Language of Original Document: English
Abbreviated Source Title: Lect. Notes Mech. Eng.
2-s2.0-85161217321
Document Type: Conference Paper
Publication Stage: Final
Source: Scopus