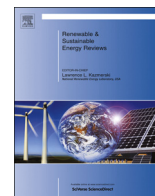




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## Review on micro-direct methanol fuel cells

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### ABSTRACT

Fuel cells have unique technological attributes: efficiency, minimization of moving parts and low emissions. The Direct Methanol Fuel Cell (DMFC) has attracted much attention due to its potential applications as a power source for transportation and portable electronic devices. With the advance of micromachining technologies, miniaturization of power sources became one of the trends of evolution of research in this area. Based on the advantages of the scaling laws, miniaturization promises higher efficiency and performance of power generating devices, so, MicroDMFC is an emergent technology. There has been a growing interest in the development of this type of micro cells in the last years, resulting both in experimental studies (operating conditions, cell design and new materials) and in modeling studies. Despite the increase in the knowledge acquired, many challenges are still to be reached. This paper provides a detailed comprehensive review both on fundamental and technological aspects of micro-direct methanol fuel cells. Special attention is devoted to systematization of published results on experimental area since to date and also to a special section dedicated to modeling studies.

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## 1. Introduction

Nowadays, consumers demand for portable, power-hungry devices (3G-cellular phones, laptop computers and internet-enabled PDAs) has stimulated researchers and industry to develop

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