

14th International Conference and Exhibition on

MATERIALS SCIENCE AND ENGINEERING

November 13-15, 2017 | Las Vegas, USA

Influence of performance of a molten hydroxide direct carbon fuel cell

Zhiguang Hu and Yanfang Gao

Inner Mongolia University of Technology, P.R. China

The direct carbon fuel cell (DCFC) is a power generation device that converts carbonic chemical energy directly into electricity by electrochemical oxidation. Because of well-known characteristics of coal-fired power plants, such as relatively low efficiencies, considerable contributions to greenhouse gas emissions, acid rain, and particulate and heavy metal pollution, improvement in coal utilization technology remains an important issue. The direct carbon fuel cell has some advantages such as the high theoretical efficiency, concentrated CO₂ product off-gas, and the high energy density of solid carbon fuel. The molten hydroxide direct carbon fuel cell is a kind of the direct carbon fuel cell. Compared to other direct carbon fuel cells, the molten hydroxide direct carbon fuel cell has more superiorities and it will become a research trend in the future. The performance and characterization of a batch direct carbon fuel cell employing molten hydroxide electrolytes will be affected by many factors. For example, temperature, different carbonaceous fuels, the type of catalysts and the proportion of molten hydroxide electrolytes will have a significant impact. At present, some research groups have started this research. I believe that it will have more space of development and benefit to human in the near future. Because of catalytic oxidation of carbon in the process, I will do some research about catalytic performance. Efficiency of the direct carbon fuel cell with molten alkaline electrolyte can be obviously improved.

yf_gao@imut.edu.cn