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## MOLTEN OXIDE FUEL CELLS

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**S**olid oxide fuel cells (SOFCs) convert chemical energy into electric power with high efficiency and low pollutant emissions at high temperature (850-1000°C). However, current targets of cost and durability necessitate SOFCs to operate in the intermediate temperature range (600-800°C). To achieve these targets oxygen ionic conductivity of the SOFC electrolyte needs to be enhanced. Recently, a molten oxide fuel cell (MOFC) concept has been suggested. The molten oxide electrolytes attract the attention because of their highest ionic conductivity at intermediate temperatures. These electrolytes consists of oxygen

ion-conducting solid grains and molten grain boundaries (GBs). These molten GBs provide the electrolyte material not only of high ionic conductivity but also gas-tightness and ductility, which would make it easy to shape and alleviate problems due to brittleness. Here we consider the transport properties of MOFC electrolytes as well as current understanding of MOFC electrochemistry and thermodynamics. The future outlook is given.

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