

Structural and Conducting Properties of doped LaGaO₃

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Abstract

A solid oxide fuel cell (SOFC) is an electrochemical conversion device that produces electricity directly from oxidizing a fuel. Advantages of this class of devices include high efficiency, long term stability, fuel flexibility and low emissions. One of the main challenges for these devices is to find materials with improved performances that allow their operation at lower temperatures, thus reducing their costs and improving their durability. To this end, in this proposal, we suggest to study the conducting and structural properties of LaGaO₃, a promising SOFC electrolyte material. This work, to be done in collaboration with experimental groups at MIT, should provide a fundamental understanding of the properties of this material and we expect might allow the prediction of optimized material compositions and working conditions for real world applications.