

## **Influence of Acceptor Dopant on the Physicochemical and Transport Properties of Textured BaCe<sub>0.5</sub>Zr<sub>0.3</sub>Ln<sub>0.2</sub>O<sub>3-Δ</sub> Materials (Ln = Yb, Y, Cd, Sm, Nd)**

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**Abstract :** The investigation of highly conductive and chemically stable electrolytes for solid oxide fuel cells (SOFC) is a necessity. The aim of the present work is to study the influence of acceptor dopant on the functional properties of textured BaCe<sub>0.5</sub>Zr<sub>0.3</sub>Ln<sub>0.2</sub>O<sub>3-δ</sub> (Ln = Yb, Y, Gd, Sm, Nd) ceramics. The X-Ray diffraction analysis, scanning electron microscopy, dilatometry and 4-probe dc method of conductivity measurements were used. It was found that the mean grain size of ceramics increases (from 1.4 to 3.2 μm), thermal expansion coefficient grows (from 7.6•10<sup>-6</sup> to 10.7•10<sup>-6</sup> K<sup>-1</sup>), but ionic conductivity decreases (from 14 to 3 mS cm<sup>-1</sup> at 900°C), when ionic radii of impurity acceptor increases from 0.868 Å (Yb<sup>3+</sup>) to 0.983 Å (Nd<sup>3+</sup>).

**Keywords :** acceptor dopant, crystal structure, proton-conducting, SOFC

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