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### **Nanoexplosion synthesis of lanthanum beta-alumina powders**

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Lanthanum beta-alumina powders were obtained by the simultaneous precipitation of the cations  $\text{La}^{3+}$ ,  $\text{Al}^{3+}$ , and by the explosive cyclotrimethylenetrinitramine or royal demolition explosive (RDX). The preliminary composites obtained, which consist of nanoreactors of powders were calcinated for breaking apart the agglomerates due to the highly energetic impacts of the blast waves produced during annealing. The powders calcined at 650 °C for 4 h have high specific surface area,  $\sim 150 \text{ m}^2\text{g}^{-1}$ . All processed powders and green pellets sintered at different temperatures were analyzed by X-ray diffraction for structural phase determination. Single phase  $\text{LaAl}_{11}\text{O}_{18}$  pellets find application as solid electrolytes in disposable electrochemical devices for monitoring dissolved oxygen species in molten steel at very high temperatures,  $> 1500 \text{ }^\circ\text{C}$ , during steel production.