

Characterization of porous aluminum fabricated via sintering-dissolution process (SDP)

Abstract

Porous metals that have open pores structure with low density and light weight properties are suitable to be used in many engineering applications. In this work, the porous aluminum was fabricated via sinteringdissolution process (SDP). Aluminum and sodium chloride (20, 40, 50 wt. %) powders were mixed together to produce a homogeneous mixture. The mixture was compressed at 200 MPa followed by sintering at 500°C, 550°C and 600°C for 2 hours. The sintered samples were placed under a warm running water stream for 45 min to dissolve the sodium chloride that embedded in the aluminum. From the result, the sodium chloride content controlled the total porosity between 20% and 40% of the sintered aluminum. Porosity increased and compressive strength decreased as the content of NaCl increased. It was also observed, the porosity increased with increasing sintering temperature for the sample with 40 wt. % of NaCl.

Keywords

Aluminum; Dissolution; Porous; Sintering