

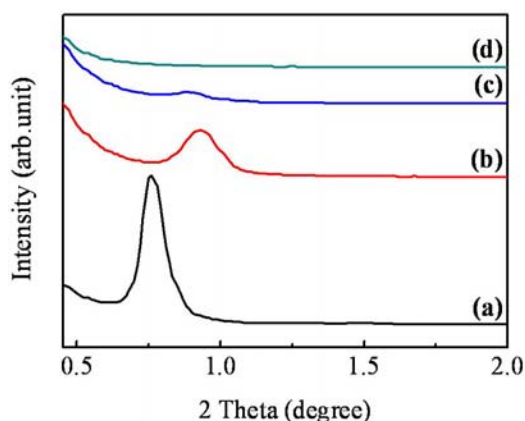
## Mesoporous Leucite Porcelain Synthesized by Sol-gel Method

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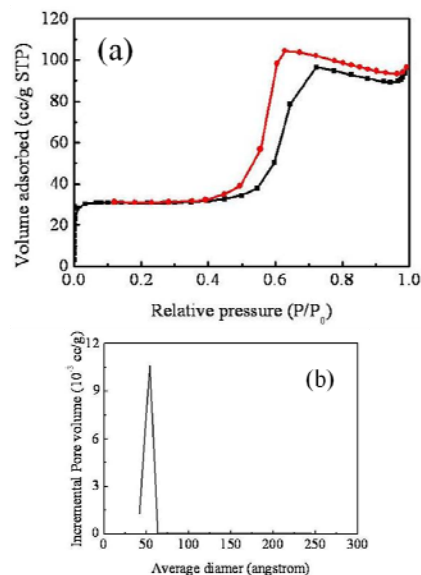
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The purpose of this study was tried to fabricate the leucite porcelain with ordered mesoporous structure. We have four topics in this plan to discuss. A study amount on the basis of the interactions between inorganic-organic to form meso-structured composites. The reaction temperature is relatively order of mesostructure. The pore structures of mesoporous materials depend on the temperature changing and pore condition of mesoporous materials depend on the pH value of micells formation.

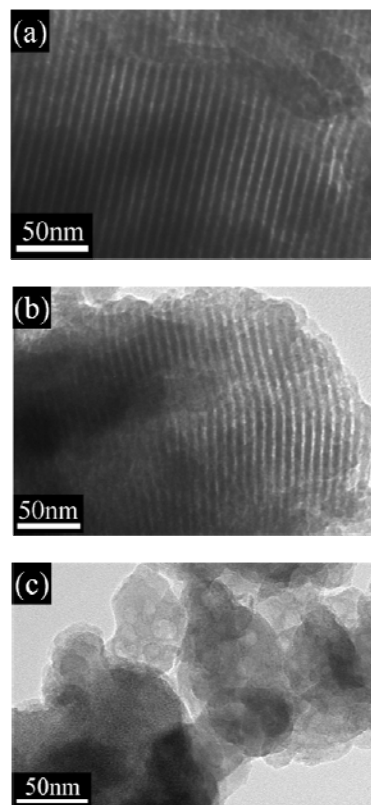
The results shown the temperature of calcination over  $900^{\circ}\text{C}$  leucite crystal was obtained. The triblock copolymer surfactant (P123) was employed as the structure agents for synthesizing the mesopore leucite at room temperature. According to the isothermal nitrogen adsorption-desorption curve and the Barrett- Emmett-Teller (BET) and Barrett-Joyner-Halanda (BJH) theories, the results shown that the mesoporous structure with the pore size of  $7\sim 8$  nm. The concentration of the surfactant (P123) is low or have no micelle will be formed; even micelle formation is difficult to great shape. P123 was 0.38 mol ratio to obtain the best amount and order of mesopore. Pores were break down when the temperature of calcination were over  $650^{\circ}\text{C}$ . Decreasing surfactant mol ratio was helpful for order mesostructure formation when aging at  $60^{\circ}\text{C}$ . But it could be opposite when increasing surfactant. Then, poer size and the BET value were decreased with the increasing pH value. These results were confirmed by TEM and reveal a highly ordered 2D-hexagonal arrangement of one-dimensional channel with a symmetry  $p6mm$  space group.



**Fig. 1:** SA-XRD of leucite powder after calcination in (a)  $250^{\circ}\text{C}$  , (b)  $450^{\circ}\text{C}$  , (c)  $550^{\circ}\text{C}$  , (d)  $650^{\circ}\text{C}$  (NSRRC 17A1,  $\lambda = 1.334 \text{ \AA}$ ) .



**Fig. 2:** The isothermal nitrogen adsorption-desorption curve (a) and the Barrett-Emmett-Teller (BET) and Barrett-Joyner-Halanda (BJH) data (b) of meso-porous leucite calcined in  $450^{\circ}\text{C}$  .



**Fig. 3:** TEM image of mesoporous leucite calcined in (a)  $450^{\circ}\text{C}$  , (b)  $550^{\circ}\text{C}$  , (c)  $650^{\circ}\text{C}$  .