

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Calcium oxide with small particles, high purity, and good thermal properties was successfully prepared by thermal treatment at 900 °C for 1 h. The synthesized calcium oxide is also a good precursor for synthesis of hydroxyapatite via sol-gel process. The obtained hydroxyapatite was nanocrystalline (30.85 nm) with high purity, and good thermal stability. The aerogel materials were also successfully prepared from calcium oxide/hydroxyapatite and polyvinyl alcohol, having high porosity and light weight like bone structure. The optimum ratio of PVA and CaO for aerogel material was 20:80. The effect of PVA weight percent from 3 to 5% wt in water was found that an increase of the PVA content led to an increase of the density, and the compressive strength, but a decrease of porosity and volume shrinkage. PVA-HAp has higher porosity, lighter density, but lower compressive strength than PVA-CaO.

The future work should be focused on the biological properties of the PVA-CaO/HAp aerogel materials.