

## Investigation on the thermal properties, density and degradation of quaternary iron and titanium phosphate based glasses

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(PBG) with tailored degradation profile allows for unique utilisation in biomedical application. Various compositions in the phosphate based glass (PBG) system of (50-x)P2O5-40Ca-(5+x)Na-5TiO(2) and (50-x)P2O5-40Ca-(5+x)Na-5Fe(2)O(3), where x=5 and 10 were prepared and characterised. Method as differential scanning calorimetry (DSC) has been used to characterise the thermal properties of these

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phosphate based glasses. It was observed that both glass transition temperature (T-g) and onset of crystallisation temperature (T-x) increased with increasing phosphate content. In addition, T-g values were found to be higher for the P2O5-CaO-Na2O-TiO2 glass system compared to P2O5-CaO-Na2O-Fe2O3 glass system. The density result showed that increasing the P2O5 content at the expense Na2O led to a decrease in density for both glass systems. The dissolution study of these glasses was conducted in phosphate buffered saline (PBS). It was observed that the dissolution rate of P2O5-CaO-Na2O-Fe2O3 glass system was higher than the P2O5-CaO-Na2O-TiO2 glass system. The dissolution rate for both glass systems was in the order of  $10^{-6}$  g cm<sup>-2</sup> hr<sup>-1</sup>.

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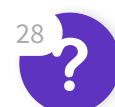
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