

## Supplementary Information

### **Incorporation of tetracarboxylate ions into octacalcium phosphate for the development of next-generation biofriendly materials**

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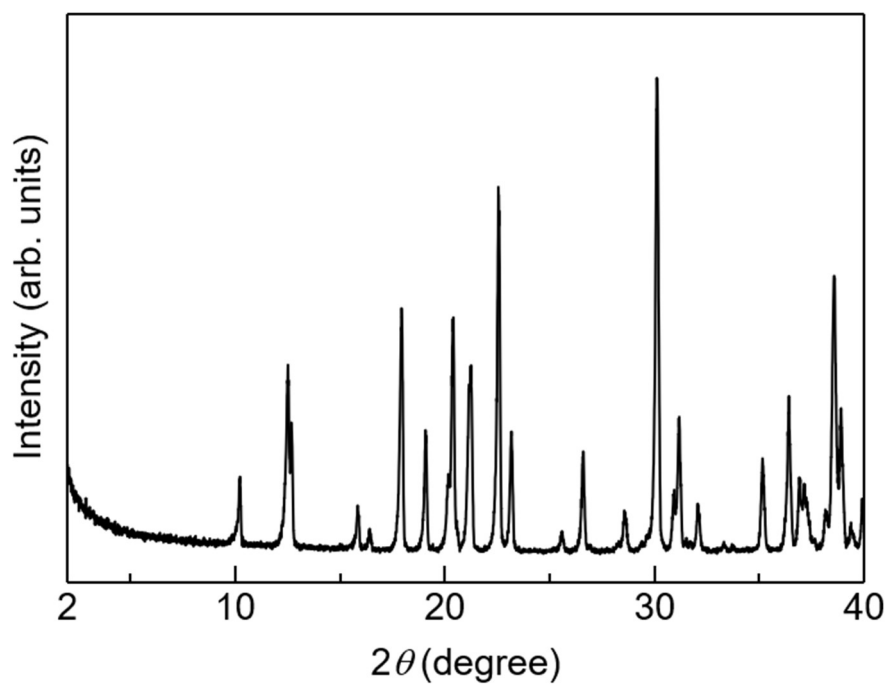
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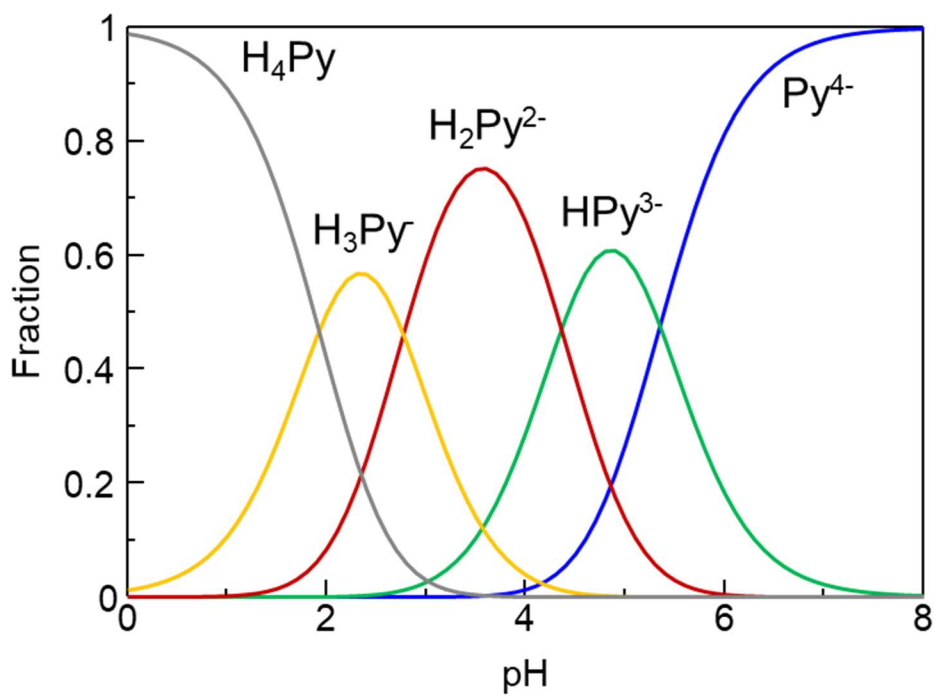
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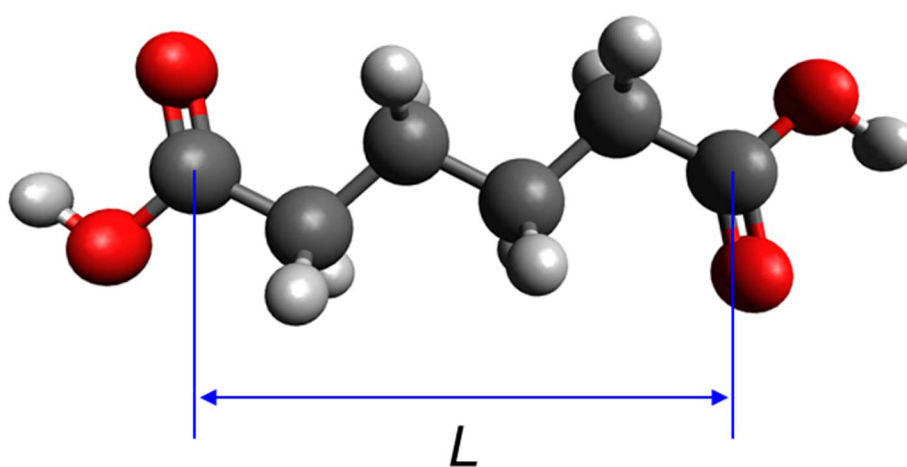
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**Supplementary Figure 1:** Powder XRD pattern of calcium pyromellitate. Calcium pyromellitate was synthesised by mixing the following solutions at 60.5 °C: 5 cm<sup>3</sup> of 1 mol·dm<sup>-3</sup> CaCl<sub>2</sub> solution and 200 ml of acetate buffer solution containing 5 mol·dm<sup>-3</sup> pyromellitic acid (pH=5.5).



**Supplementary Figure 2:** Dissociation states of pyromellitate ions with respect to the pH. The dissociation states of pyromellitic acid were calculated based on the following dissociation constants:  $pK_{a1}=1.92$ ,  $pK_{a2}=2.77$ ,  $pK_{a3}=4.36$ , and  $pK_{a4}=5.35$  [Ref. 39].



**Supplementary Figure 3:** Schematic illustration showing the definition of  $L$ .  $L$  is the distance between the carbon atoms of two carboxy groups of a carboxylic acid (in this case adipic acid).