A Macroscopic Model of Molecular Imprinting

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In this communication we describe the preparation of a model to simulate the imprinting process on a macroscopic scale using a hydrogel matrix. The matrix, namely raspberry flavoured jelly (jell-O) was purchased from a local supermarket [1] and prepared by dissolving the product in tap water at approximately 90°C and allowed to cool to 25°C. At this stage the molecular simulants (a mixture of pieces of apple, pear, peach and pineapple cut to 8mm × 8mm × 8mm) were introduced and the mixture stirred before transfer to a refrigerator at 4°C overnight to allow the hydrogel matrix to solidify.

It was observed that, due to the greater density of the molecular simulants, there was an uneven distribution of the nascent imprints, being concentrated at the lower extremes of the reaction vessel (Fig. 1). It is proposed therefore that the experiment should be repeating in a microgravity environment to combat this effect. A proposal to take this experiment to the International Space Station is in preparation. Template removal with a spatula (a dessert spoon) proved impossible without significant disruption of the hydrogel matrix, therefore additional samples were treated with a layer of custard and whipped dairy cream and consumed by the researchers. In conclusion, the experiment was a trifle successful.

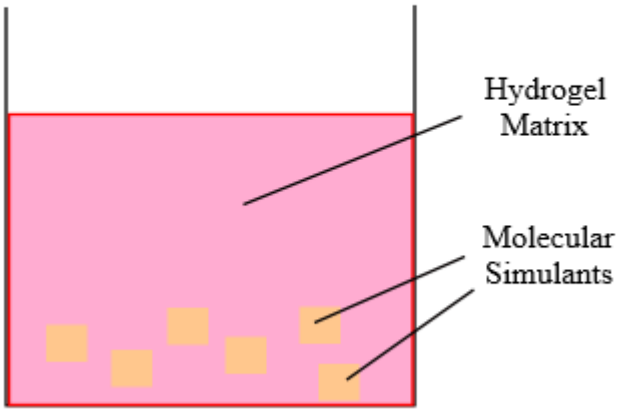

Figure 1. Uneven distribution of molecular simulants in the hydrogel matrix.

[1] Sainsburys, High Street, Nowhere Special.