



A Bright Future for Thermal Methods

www.Cyversa.com

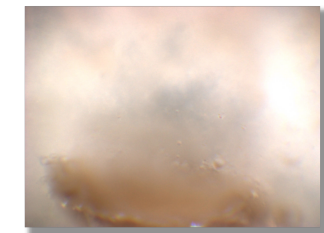
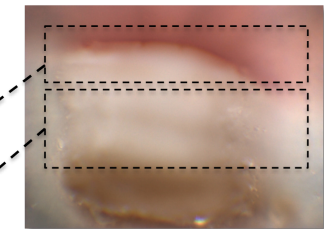
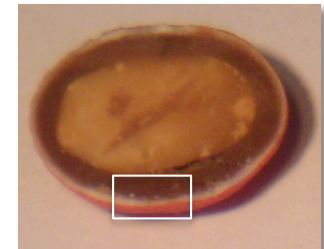
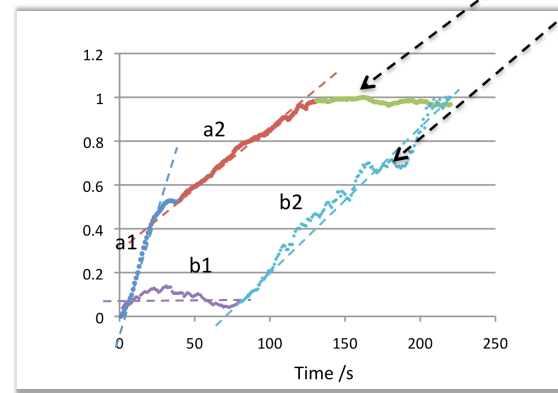
TASC Applications for Foods

- Thermal Dissolution Analysis
- Multiple techniques applied to a complex sample.

Thermal Dissolution Analysis

Top right, is a candy cut in half; it can be seen that there is a two color coating over the chocolate layer indicated by the white square. **Middle right** is an image of the coating removed and placed in water. The coating dissolves leaving behind the chocolate as shown **bottom right**. TASC is applied to two separate areas shown by the two boxes bordered by dashed lines. The upper box characterizes the dissolution of the red layer, the lower box that of the white layer.

The graph shown **right** exhibits two stages for the red layer, a1 and a2. We interpret a1 as being the rapid leaching of the red dye from near the surface followed by a2 where dissolution occurs but is retarded by the wax layer on the surface. For the white layer we see b1 where dissolution is initially inhibited by the red layer but as this diminishes past a certain point dissolution occurs during b2.



Multiple Techniques Applied to a Single Sample

This is an example of applying multiple techniques to a complex sample shown **below right**. **Below middle** a penetration TASC-TMA measurement was performed on the sample from the chocolate layer which melts at circa 35°C.

A part of the coating, approx 4mm, was measured using TASC in 3-point bend mode, see **middle right**.; there is sharp melting at circa 175°C. On closer inspection there seems to be a pre-melting event starting at circa 150°C. **Below left**, A TASC experiment on the surface reveals a 2-step process. The first with an onset of circa 75°C corresponds to the carnauba wax coating. We speculate that the second derives from an interphase that is bounded by b) and the premelting event c).

