

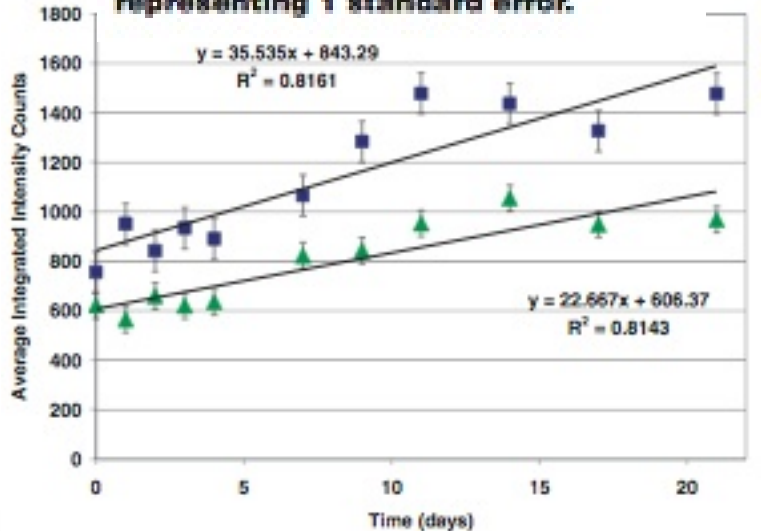
# Use of XRD/Tg To Understand Food Stability

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## DESCRIPTION OF WORK

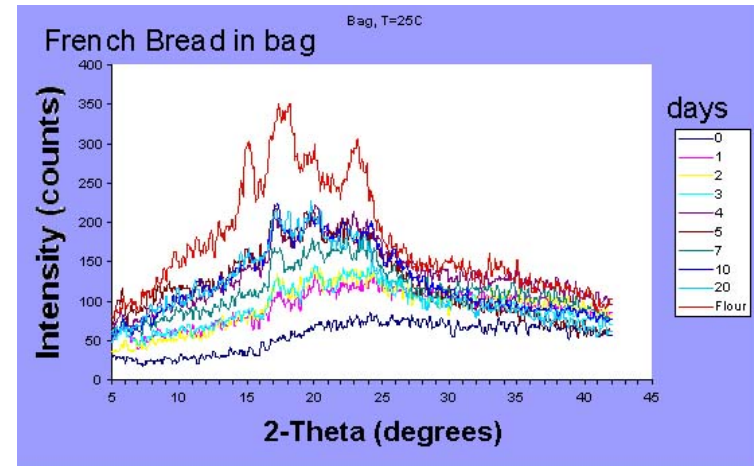
- ◆ Stability of cotton candy as f(Tg)
- ◆ Hardening of bread and soft cookies
- ◆ Caking of powders and dried distillers spent grain
- ◆ WLF kinetics of lactose crystallization

Figure 4 – Sucrose crystallinity in control and raffinose-added cookies during storage at 23 °C. Control ■, Raffinose ▲, with error bars representing 1 standard error.



## MAJOR OBSERVATIONS

- ◆ XRD is a very useful tool to explain caking of powders
- ◆ Crystallization of sucrose is initiating step in hardening of soft cookies
- ◆ Raffinose inhibits sucrose crystallization in cotton candy and soft cookies



## Publications

- Belcourt, L and Labuza, T.P. 2007 Effect of Raffinose on Sucrose Recrystallization and Textural Changes in Soft Cookies J. Food Science 72(1):C65-C71
- Leinen, K. and T.P. Labuza 2006 Crystallization Inhibition of Amorphous lactose using raffinose. Journal of Zhejiang University SCIENCE B Applied Physics and Engineering Sciences 7(2) 79-83
- Roe, K and Labuza, T.P. 2005 Glass transition of Amorphous Trehalose-Sucrose systems Jr. Food Properties 8 (3): 559-574
- Lara Manzocco, Maria Cristina Nicoli and Theodore P. Labuza 2003 Impiego dell'analisi di diffrazione dei raggi X (XRD) per lo studio dei fenomeni di rafferimento del pane. Techica Molatoria 53(12) 1208-17