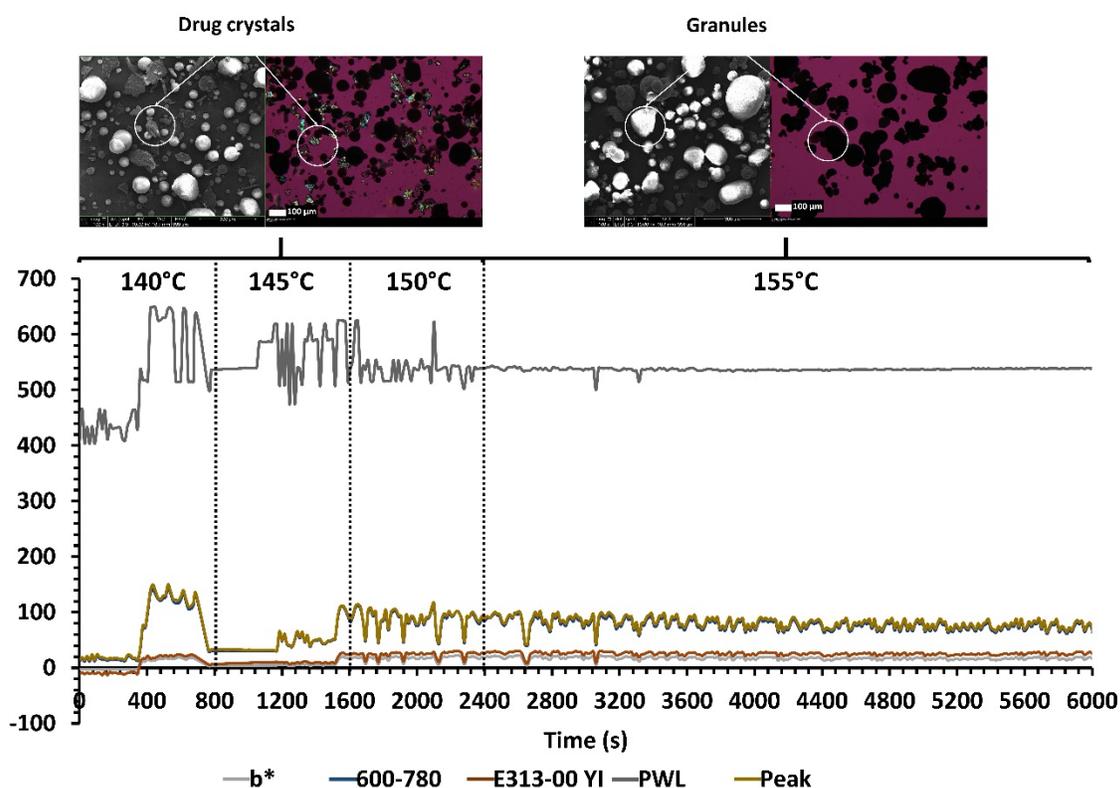


Equitech's In-line UV-Vis Technology Used As a PAT Tool to Monitor Process Stability and Product Conversion During Pharma HME Operations

A recent article in the *European Journal of Pharmaceutics and Biopharmaceutics* by members of Professor Mohammed Maniruzzaman's research team at the College of Pharmacy at the University of Texas at Austin described the development of Equitech's in-line UV-Vis spectroscopy technology as a process analytical tool (PAT) to monitor the stability of a hot-melt extrusion (HME) process and to monitor the amorphous conversion of the active pharmaceutical ingredient (API) indomethacin. Equitech's real-time monitoring of color parameters which for this API enabled tracking its transition from a pinkish white colored crystalline state to the desired yellow colored amorphous state as a function of process temperature by following the color parameter b^* during the HME granulation process. Additionally, process stability was followed by monitoring yellowness index (which trends with b^*), a custom wavelength range (600-700 nm), the wavelength of maximum reflectance over the desired region (referred to as PWL), and the reflectance value of the PWL (that is the Peak). Referring to the figure below ramping up the process temperature from 140°C to 155°C over a period of processing time indicates full conversion of the API to its amorphous state with a concomitant attainment of steady state operation indicative of good mixing of the formulation's constituents. In summary, Equitech's in-line UV-Vis spectroscopy proved useful in understanding the effect of processing conditions on the desired performance and quality of the product and the ability to assure long term steady state operation.



For a full description of this work refer to Thakkar, Rishi, Zhang, Yu, Zhang, Jiayang, Maniruzzaman, Mohammed (2021) *Synergistic application of twin-screw granulation and selective laser sintering 3D printing for the development of pharmaceutical dosage forms with enhanced dissolution rates and physical properties*. *European Journal of Pharmaceutics and Biopharmaceutics*, 163 (2021), pp. 141-156. This article can be accessed via the link <https://doi.org/10.1016/j.ejpb.2021.03.016>