Deploying AI Enabled Video to Better Understand Crystallisation Events

The challenge

The CatSci team was set the task of developing a robust scalable manufacturing process suitable for transferring to plant. The scale-up process took 15 hours and required constant monitoring to define critical change events. In this process, a non-linear 3-stage state change occurred. Firstly, the material oiled, then formed a gum and precipitated as a white solid. However, the final transition was not observed by eye, which made it difficult to make a report. Without formally defining the final state change process and ensuring it was controlled, risk remained in tech transfer of the project for manufacturing campaign.

How?

The CatSci team employed Lumi, an AI computer vision tool, to monitor and record the reaction. Lumi automatically flagged changes when they occurred. The critical data captured showed a fast transition caused by a splash of gum onto the vessel side walls generating seed particles which then precipitated quickly into a white solid. The video captured clearly communicated these observations and allowed for a clear interpretation of processes involved.

The achievement

Through Lumi the CatSci team was able to:

- Better understand a non-linear 15h process.
- Propose a controlled process and develop a much more predictable precipitation.
- Show the customer real-time footage of their process, enabling us to make critical decisions more efficiently and effectively.
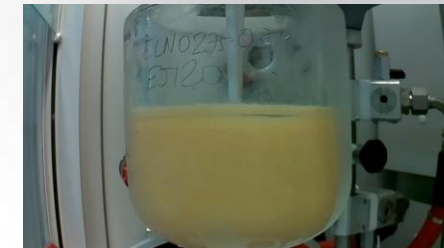
The team: Dr Emmanuelle Juan

The set-up

Lumi

Initial slurry

Gum phase

Final precipitate

Self-seeding

Find out more: catsci.com