Session	Emerging innovative technologies: novel fermentation and novel downstream processing innovations
Title	Turnkey Raman analyzer for real-time chemical monitoring in bioprocessing
Company	Perceptra Technologies B.V.
Speaker	Ata Atabaki
TRL	TRL 4 - 7
Keywords feedstock (max 2)	Feedstock-agnostic
Keywords technology (max 2)	Raman spectroscopy
Keywords End-Product (max 2)	Raman analyzer

Abstract:

Perceptra, an MIT spin-out with a European subsidiary in Eindhoven, the Netherlands, is on a mission to make real-time chemical monitoring standard in bioprocessing. Most fermentation runs still rely on manual sampling and offline lab analysis, so decisions lag hours behind what is happening in the tank, costing operator time and sometimes entire batches. Raman spectroscopy can measure process chemistry in real time, but high instrument cost and months of model building have kept it out of most plants. Perceptra is tackling both barriers with new hardware and machine learning. Our process-agnostic models cut model development from months to hours. Earlier this year, we deployed our benchtop analyzer, OmniTrace, on a 150 L fermenter at Bio Base Europe Pilot Plant and monitored glucose continuously in two different media, including a second-generation feedstock, without a prior calibration run, with readings validated against offline HPLC. In parallel, we are developing a low-cost Raman spectrometer built on our proprietary photonic chip. Ultimately, we aim to put an affordable, easy-to-use probe on every bioreactor, laying the foundation for fully autonomous, data-driven bioprocessing.