



Session	Novel technologies – AI for Biomanufacturing
Title	Self-Driving Fermentation: Agentic AI and Digital Twins for Continuous Biomanufacturing
Company	Pow.bio
Speaker	Ouwei Wang
TRL	TRL 4 - 7
Keywords feedstock (max 2)	versatile
Keywords technology (max 2)	AI, Continuous-Fermentation
Keywords End-Product (max 2)	versatile
Abstract:	
Biomanufacturing is still artisanal: million-dollar bioreactors run on spreadsheets and gut feel. Most innovation has gone into strain discovery, yet molecules fail in process development and scale-up. Pow.bio closes that gap with continuous fermentation run by agentic AI. Our multi-chamber continuous fermentation system separates growth from production for strain stability, removes product continuously while recycling cells, and delivers 2-5x the productivity of fed-batch. Continuous processes are powerful but hard to operate, so a team of AI agents runs them under human supervision: a Watcher reads every sensor and flags drift, a Controller proposes setpoints, and an Enforcer holds safety limits and calls the operator when needed. Every action is grounded in two bioprocess models. SOFe, our self-optimizing fermenter, turns one continuous run into a search engine where each steady state is a new data point, mapping a full response surface in a few steps instead of months of fed-batch runs. Cassie, a physics-informed digital twin, validates AI's actions before they reach the tank. We will share lessons from running agents on real reactors and are seeking early-access partners for process development and scale-up.	