

Photochemistry as an innovative and scalable technology for biomass processing

Pitch Perfect and boost the European Bio-economy

7 November 2018, Brussels Airport, Belgium

Photochemistry



The “chemistry of life”



The “chemistry of vision”

Photochemical processing of biomass

- ❖ **Huge potential:** new reaction pathways can lead to diversification of products
- ❖ **Underutilized:** thermal reactions dominate
- ❖ **Major hurdle:** scalability
- ❖ **Solution:** the HANU-reactor

Meet the HANU-reactor



<http://www.creaflow.be/video-hanu-reactor>

Photochemistry and beyond?

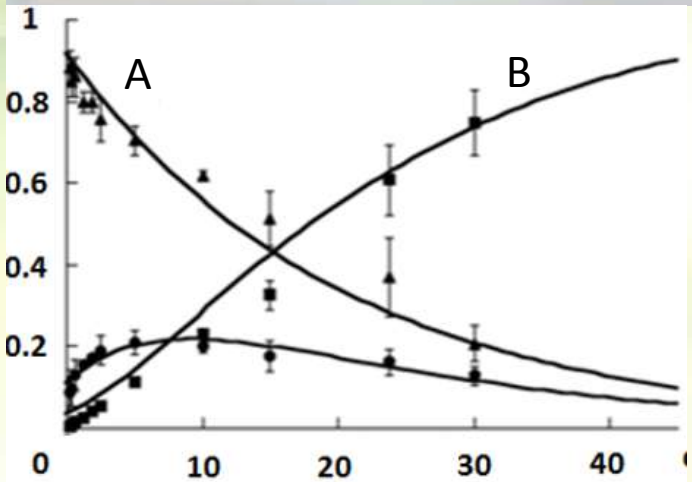
Design requirement for photochemistry	Advantages for all types of chemistry
Intense mixing	Mass transfer Heat transfer Residence time distribution Pulsation: frequency and amplitude
Large transparent window	Visual inspection at every conversion point (color change, precipitation, behavior multiphase reactions, ...)
Assembled unit	Precipitation (clogging) is noticed and remediated by disassembling and physical cleaning

Scalability (1)

Tool for process development



Conc (M)



A → B

Scalability (2) From Lab to Pilot



Lab version in skid
EcoSynth
Deinze, Belgium



Pilot version
Ajinomoto Bio-Pharma Services
Wetteren, Belgium

Customization

Reactor can be custom designed to adjust to:

- ❖ Critical process parameters
- ❖ Chemical compatibility (Stainless steel, Hastelloy, ...)
- ❖ Physicochemical properties (Multi-phase, viscosity,)

Contact

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Creaflow can act as a partner or subcontractor