

Photo-Chemistry in Continuous Manufacturing & Process Analytical Technologies



Maarten Honing

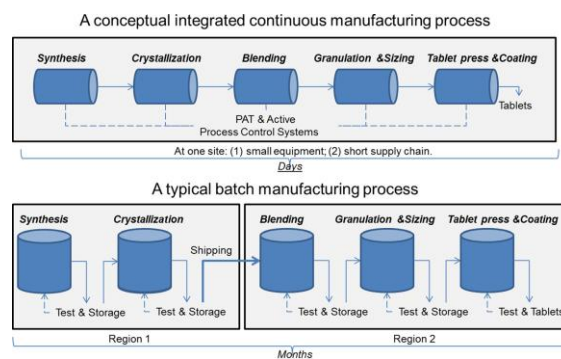
The Maastricht Multimodal Molecular
Imaging Institute (M4i)
Division of Imaging Mass Spectrometry
Maastricht University, The Netherlands.

SusChem Brokerage Event
October 23rd 2018 Brussels

Analytical Technologies DT-NMBP-08-2019: Real-time nano-characterisation technologies & CE-NMBP-25-2019: Photocatalytic synthesis.

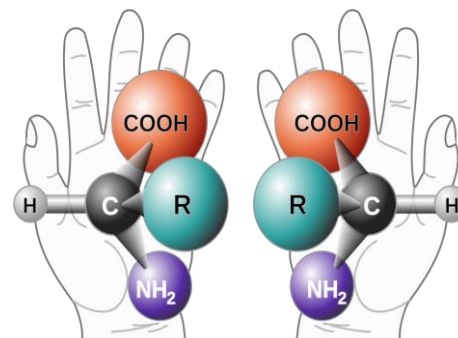
Global trends in Chemical (Pharma) Processing

- *From Batch to Flow - Continuous manufacturing* (FDA policy 2008) focused on Quality, Costs, Energy efficiency (CO₂), Health Safety & Environment (Organic Waste).
- *Process Analytical technologies* – FDA & Industry policy Universal, Sensitive, Stereo-chemical & Time Resolved,



Technological & Scientific Challenges in Chemical (Pharmaceutical) Processing

- Design, application of *Flow-reactors & Engineering*
- *Photo- & Electro* induced chemical conversions
- New approaches in Process Analytical technologies
- Lack of e.g. *universal & stereo-selective* measurement
- Integration & *Miniaturization* (costs) of Analytical Technologies



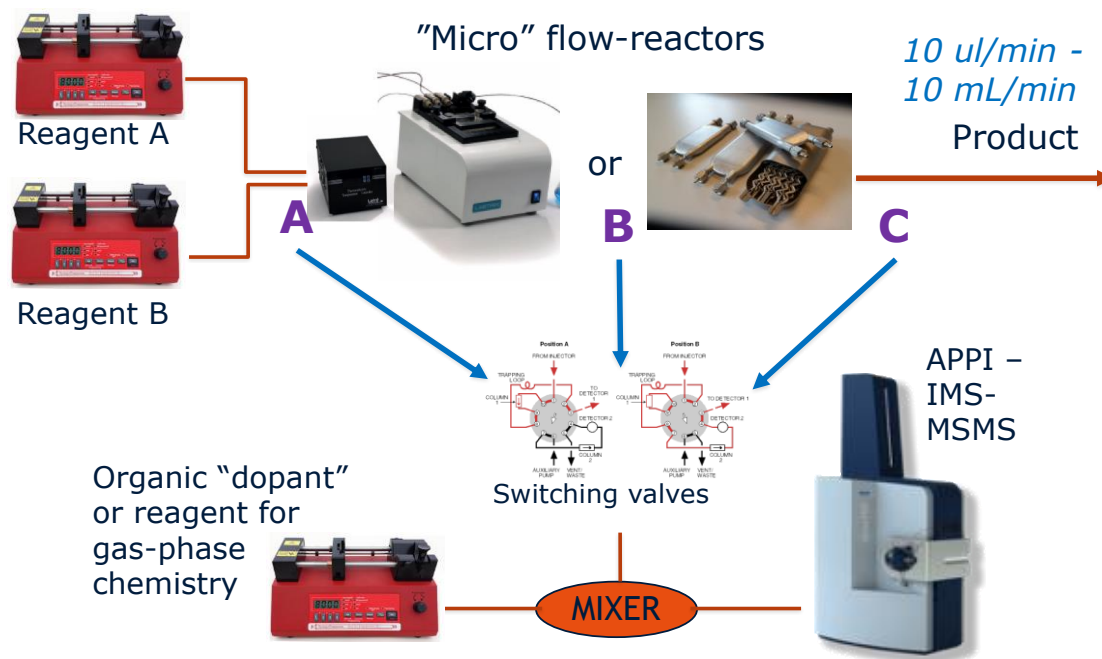
Analytical Technologies DT-NMBP-08-2019: Real-time nano-characterisation technologies & CE-NMBP-25-2019: Photocatalytic synthesis.

Novel Approach (Literature on selective ESI-MS, insensitive NMR, non stereo resolved IR)

Design of in-line & on-line, Universal (APPI) Mass Spectrometry based *stereo-selective (IMS)* process analytical technologies.

Simultaneous monitoring of;

- Feedstock
- In Reactor
- Post Reactor.



Organic "dopant" or reagent for gas-phase chemistry

Analytical Technologies DT-NMBP-08-2019: Real-time nano-characterisation technologies & CE-NMBP-25-2019: Photocatalytic synthesis.

On going projects with Chemtrix (Flow Reactors), Innosyn (Industrial R&D support), TU/e (Photo Chemistry Sciences) & Pharma – Chemical Industry



Analytical Technologies DT-NMBP-08-2019: Real-time nano-characterisation technologies & CE-NMBP-25-2019: Photocatalytic synthesis.

Looking for

- ✓ Connect to **partners** from different European countries for new R&D projects
- ✓ Connect to **specialist** from **funding** programs for input & guidance
- ✓ Maarten Honing - > 25 y R&D at Organon & DSM, ~ 8 y Academia – Management of Public Private Collaborations & Chair Dutch Topsector Chemistry – Council Chemical nanotechnologies & Analysis

