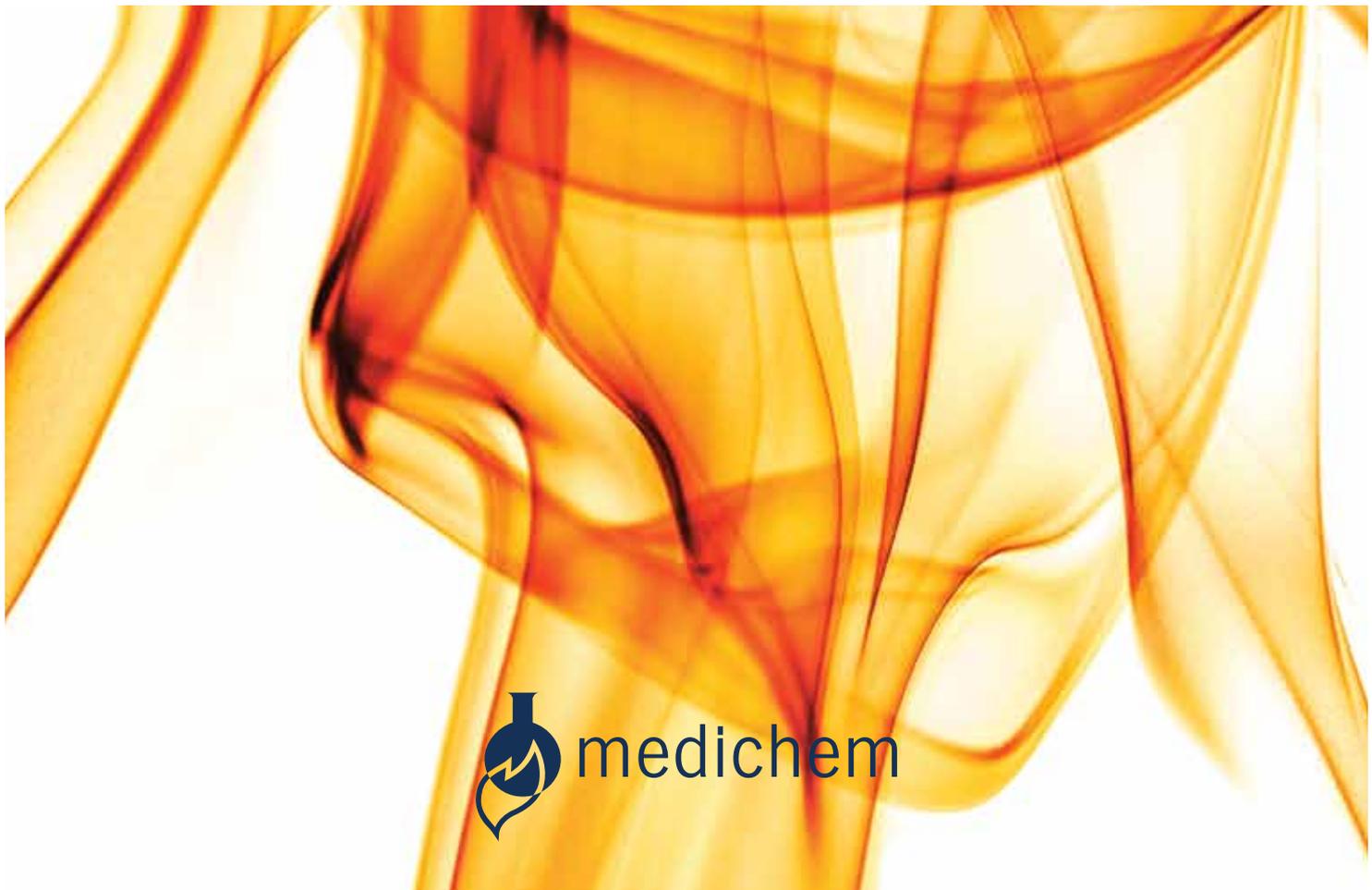


FLOW

CHEMISTRY



WHAT IS FLOW CHEMISTRY?

In the pharma and specialty chemicals, Organic synthesis is generally conducted in a batch mode. In the last decades, the interest in Flow Chemistry has increased due to the economic and environmental pressures and promotion from regulatory authorities such as FDA. It is no longer in its infancy, and has been widely studied by the chemical industry for many years. However, implementation of continuous processes in pharmaceutical manufacturing is not a standard practice. Currently, Medichem offers this technology in its Spanish Plant (Celrà, Girona). However, since the equipment is mobile, this technology can also be offered from our Malta plant to benefit also from the IP situation there.

In a continuous flow system the chemical reaction is carried out with a continuous supply of starting materials. In other words, the reactants are pumped into a microreactor and they start reacting as soon as they mix.

BENEFITS OF FLOW CHEMISTRY?

Chemistry in flow provides exquisite control over reaction conditions:

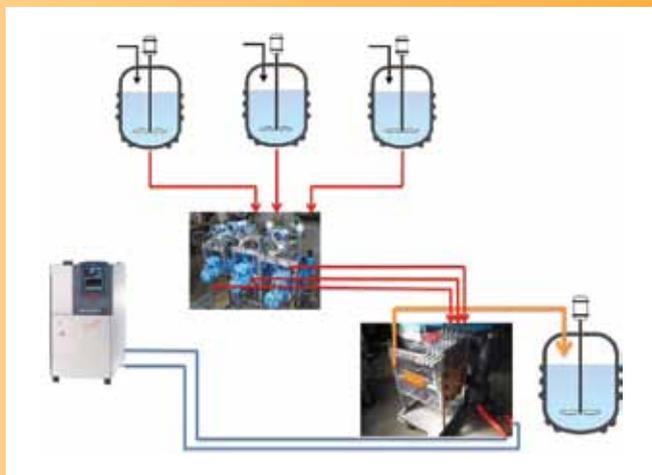
- > BETTER HEAT TRANSFER EFFICIENCY
- > SUPERIOR MIXING QUALITY
- > SCALE-UP ISSUES ARE MINIMIZED
- > IMPROVED SAFETY BY LOWER INTERNAL VOLUME
- > IMPROVED REACTION SELECTIVITY
- > FASTER REACTIONS

Flow chemistry also allows:

- > RAPID REACTION OPTIMIZATION
- > PERFORMING HAZARDOUS CHEMISTRY
- > REACTIONS UNDER PRESSURE
- > CRYOGENIC REACTIONS, LOW TEMPERATURE CHEMISTRY

MEDICHEM EQUIPMENT

Medichem can provide scale up services from R&D to industrial scale.



THE LAB SETTING INCLUDES:

- > Fully automated dosing lines
- > Heating and cooling capacity
- > Lab-scale microreactors in glass and stainless steel

THE INDUSTRIAL SETTING INCLUDES:

- > 3 fully automated pumping units from 0 bar to 20 bar
- > 1 industrial G4 Corning reactor. up to 300 Kg/h processed
- > Heating and cooling capacity from +200°C to -60°C

MEDICHEM IN A FLASH

- > 40+ years in the industry
- > cGMP company
- > FDA inspected since 1985
- > Both plants (Spain and Malta) are no "Form 483"
- > ISO 9001 & ISO 14001 certified
- > R&D Center in Nanjing (China)



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