Introduction

Major advantages of ‘direct write’ (structuring reactors and devices into multi-channel, multi-layer architectures) is that they allow for:

- precise and uniform distribution of active material over a high surface area
- highly adaptable/tailor-made and well-controlled design for optimal flow pathways
- low pressure drop, improved mass- and heat-transfer
- easy (in-situ) regeneration and cost-effective product removal
- overall greatly improved productivity per cubic meter of reactor volume

What do we offer?

By employing emerging 3D printing technologies (such as 3D fibre deposition, dispensing and binder jetting) we offer bespoke patterning of:

- oxide ceramics (e.g. Al₂O₃, SiO₂, ZrO₂, multi-component metal oxides, nanocomposites)
- metals (e.g. titanium, copper, aluminium, silver) and alloys (e.g. stainless steel)
- non-oxide ceramics (e.g. silicon carbide, carbon, boron nitrate)
- other functional materials: polymers, zeolites, MOFs, graphene oxide

Ready-to-use, scalable, user-defined 3D matrix-like systems can be used as:

- adsorbents for gas cleaning (separation, removal and recovery of CO₂, H₂S, H₂O, NOx, VOCs)
- catalysts for gas and liquid phase reactions (CO₂ utilisation, (de)hydrogenation, methanation, methane conversion,...)
- metal scavengers for flow through applications
- supports and carriers, electrodes for fuel reforming, electro-chemical cells, heat exchangers and (hollow fibre) cooling elements

Advanced characterisation of microstructure and deposited material:

Who do we cater for?

- Materials (catalyst and adsorbent) manufacturers
- Polymer processing industry
- Additive manufacturing industry
- Petrochemical sector and Fine and speciality chemistry
- Fuel cells and electrochemistry

Calls of interest:

NMBP, FoF, SPIRE, SC3, SC5 ...

- DT-NMBP-19-2019: Advanced materials for additive manufacturing
- CE-NMBP-24-2018: Catalytic transformation of hydrocarbons
- LC-SC3-NZE-1-2018: Advanced CO₂ capture technologies
- CE-SC3-NZE-2-2018: Conversion of captured CO₂