

**SPECIAL FEATURE SECTION for the 10TH INTERNATIONAL CONFERENCE ON MICROREACTION TECHNOLOGY (IMRET 10): ORGANIC SYNTHESIS BY MICROPROCESS TECHNOLOGY***Editorial***IMRET 10: Process Intensification via New Reactor Technologies and New Ways of Processing**

Microprocess technology, after years of fundamental research, continues to be increasingly applied and accepted in industry. Being interdisciplinary in nature and application, vigorous research is ongoing in targeting new challenges in processing. Although still emerging, microprocess technology has already become a key paradigm for process intensification which, distinct from traditional chemical engineering, demands reactors and apparatus that operate in new and different ways and new process approaches, rather than simply optimizing existing technology.

The 10th International Conference on Microreaction Technology (IMRET 10) summarized the state-of-the-art in microprocess technology and pointed toward new topics on the horizon. The meeting was comprehensive in that it presented both the theoretical aspects of microchemical technology and several examples of applications for solving real problems. The interdisciplinary nature of the field has caused it to evolve with a strong fundamental basis, as contrasted to purely classical chemical engineering which comes from an empirical basis. This unique aspect of microchemical engineering as a distinct discipline has been recognized as a strong motivation for educational initiatives to train scientists and engineers for the field; several such programs have been developed and are flourishing. IMRET has traditionally been the primary forum for presenting industrial demonstration cases with microstructured reactors reaching production scale and market considerations. This impetus in commercialisation was evident in the panel discussion "Progress in the Commercialization of Micro Process Technology" with numerous representatives from industry. In this discussion, the "human factor" was considered which demands focused communication between researchers, suppliers, and users of this innovative technology as well as between chemists, material scientists, chemical engineers, and physicists.

The international representation of IMRET presentations makes it evident that, while research on microprocess technology is truly worldwide, the major spots of activity are still centred in Germany, The Netherlands, the United States, and Japan, especially when industrial case studies are considered. In a topical view, many presentations were continuations of the long-lasting experience with fine-chemistry and fuel-processing applications; however, emerging topics such as separations and particle synthesis were also part of IMRET 10.

Even the more "traditional" applications such as fine chemistry continue to show relevant new directions. With organic chemists entering in, the term "flow chemistry" arose, and it now really seems that their cupboards will, as a matter of course, contain tiny microreactors in addition to the glass flasks. IMRET 10 is a mirror

of such exciting developments, and it thus may be seen as a token of collective pride by our community that this get-together of "microreactioners" was embedded in the first joint American Chemical Society (ACS) and American Institute of Chemical Engineers (AIChE) meeting ever held; about 14,500 researchers met in New Orleans in April 2008.

Thus, it was quite logical, after two IMRET 10 special issues focusing on the engineering side of microreaction (one in *Chemical Engineering & Technology* (released) and the other to be in *Chemical Engineering Journal*), that a chemistry-based special issue devoted to the corresponding developments of organic chemists and process developers is to be published. *Organic Process Research & Development* (OPRD) is an ideal platform for such research papers. This OPRD Special Feature Section thus gives an impression of some of the relevant developments taken from selected presentations in the areas of organic chemistry. Some focus is given on the exploration of specially suited process conditions not feasible in classical equipment, which are typically named "harsh conditions" or "novel process windows." These are bridges to similar developments from microwave chemistry which enable order-of-magnitude improvements, e.g., in reduction of reaction times.

IMRET 10 was organised under the umbrellas of the Process Development Division (PDD) and "Micro Process Engineering" of AIChE, which have the mission to provide a forum for case studies of demonstration and technology projects. PDD is a consortium with the majority of participants being industrial pilot developers, ranging from pharmaceutical/fine chemical to bulk/petrochemical industries.

Microprocessing, while now settled and rooted in process engineering, is still a young, agile and developing technology with interdisciplinary character. It is in many ways similar to the meeting place for IMRET 10, New Orleans, emblematic of a lively, attractive destination bridging unique and fascinating musical styles like jazz and the blues.

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