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# Editorial

During the International Symposium on Air Pollution Abatement Catalysis held in Cracow (APAC, 21–24 September 2005), we presented work on the application of the Temporal Analysis of Products (TAP) reactor to elucidate the mechanism of $N_2O$ activation and reduction over iron-containing zeolites. The feedback of the audience on this established but still not so popularly accessible technique was very positive. Julian Ross and Ben Nieuwenhuys, attendees of the meeting, encouraged us to look at the possibilities of assembling an issue of *Catalysis Today* devoted to TAP studies of catalytic processes. We were appealed by their proposal, and the response of world-leading scientists on the technique from academic as well as industrial laboratories in Europe, Asia, and North America was extremely supportive. The result of this initiative ended up in this volume entitled ''*The TAP Reactor in Catalysis—Recent Advances in Theory and Practise*''.

Since John T. Gleaves conceived the TAP reactor at Monsanto in the late seventies, this time-resolved transient pulse method has experienced important developments, becoming a powerful and versatile tool for investigating mechanisms of events associated with the heterogeneous catalytic process (adsorption, diffusion, reaction). This technique is positioned at the boundary between traditional ambient pressure techniques and ultra-high vacuum surface science techniques with respect to catalytic surfaces and pressure regimes. Thus the often-highlighted pressure and materials gaps in mechanistic investigations can be narrowed, as exemplified in the opening review manuscript.

We believe that the papers in this issue are representative of the state-of-the-art in TAP-related research. Readers will hopefully find a fine match between applications in a wide range of heterogeneously catalyzed reactions and diffusion, kinetic modelling of transient data, new experimental approaches, and advances in theory. Our firm impression after setting up this volume is that the TAP technique has great potential in the frame of catalysis research, not only for curiosity-driven fundamental studies, but also for implementation in industrially oriented catalyst development programs.

The guest editors wish to thank the contributors and colleagues for their time and efforts in the reviewing procedure.

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