

FT-NIR Real Time Data for Process Monitoring and More

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FT-NIR spectroscopy has evolved into a trusted tool for process monitoring in the chemical industry. The real-time measurement of molecular composition has allowed to significantly speed up batch cycle time and to optimize the use of raw materials [1].



Bruker Matrix-F with a transmission probe mounted on channel1 and a contactless reflection probe connected to channel2. The system can be equipped with up to six completely different probes for monitoring up to six independent sampling points/reactors.

In this contribution we will discuss how the scalability of FT-NIR-spectroscopy enables its seamless implementation for process control. Consistency among measurements with different instruments and varying probe configuration allow to combine calibration results from different stages of the process development and scaling, which will be key to a lasting investment: starting from a lab-scale feasibility study, followed by a stable and full-range calibration which - with little effort - is transferred into full scale production process.

The success of industry 4.0 tightly bound to the availability of large, high-quality datasets. In- and on-line FT-NIR spectroscopy generates large amounts of data containing plethora of information about molecular, chemical, and physical properties of the observed process. There is no doubt that such complementary information will be highly valuable in developing data-driven process control models and moreover, to check the consistency of their output.

[1] D. Martoccia, H. Lutz, Y. Cohen, T. Jerphagnon, U. Jenelten, *Chimia*, **2018**, 72, 139-145.