

PAC

Process Analytical Chemistry - Data Acquisition and Data Processing

Main location	Linz (Upper Austria)
Other locations	Kundl (Tirol), Salzburg, Lenzing (Upper Austria), Krems (Lower Austria), Vienna
Thematic field	Gaining valid chemical information directly from the process streams of chemical and biochemical industry, inline and in real-time.

Success story summary

Looking inside nontransparent materials with Terahertz-technology – Spectral Descriptors in the Terahertz region

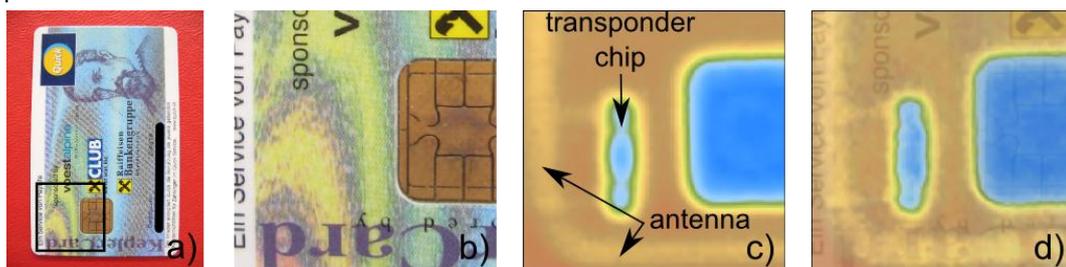
The concept of “spectral descriptors” brings the analysis of samples (that is the application of chemometric methods) on a higher level. Dataanalysis is possible within split seconds and will be presented in colourcoded images where interpretation is simple. Analysing the data with spectral descriptors has the big advantage that only informative regions of the signal are going to be used for data analysis.

Success story

The data of samples (e.g. nontransparent plastics), scanned and measured with THz-technology, are hardly interpretable because of the amount of data produced and because of the complex materials' properties; thus a computerbased analysis is necessary. In this step the concept of “spectral descriptors” is introduced, making it possible to analyze THz-data within split seconds. Spectral descriptors have the big advantage, that only informative regions of the THz-signal are used for analysis leading to a much smaller datasize. This makes the application of chemometric methods on THz-imaging datasets possible. In the end a colourcoded image is available, making an interpretation very easy and providing the most significant pieces of information about the sample neatly highlighted. As an example some images of a sample, scanned with THz-technology, analysed and colourcoded with chemometric methods using spectral descriptors, are shown below.

A view into the inside of a transponder card

Inside a transponder card an antenna and a microprocessor are embedded, enabling the card to send signals to a receiver, e.g., to open doors. With the method introduced above it is possible to look inside this nontransparent card and highlight the hidden components.



Impact and effects

With this method it is possible to have a look into the inside of plastics. This has the advantage to highlight covered material defects (air bubbles, metall, and so on) already during production. This is for sure useful for further material inspections as well as for control of planned defects like predetermined breaking points.

Contact:	K-Project PAC – Process Analytical Chemistry RECENDT GmbH, Robert Holzer Altenberger Straße 69, A – 4040 Linz +43 (732) 2468 - 4602 robert.holzer@recendt.at www.recendt.at
-----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------