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Customer-Affordable Handheld Near-Infrared Spectrometers: On-Site Quality Control and Protection against Product Counterfeiting

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Recently, miniaturization of Raman, mid-infrared (MIR) and near infrared (NIR) spectro-meters has made substantial progress, and marketing companies predict this segment of instrumentation will have a significant growth rate within the next few years. This increase will launch vibrational spectroscopy into a new era of quality control by in-the-field and on-site analysis.

While the weight of the majority of handheld Raman and MIR spectrometers is still in the ~1 kg range, the miniaturization of NIR spectrometers has advanced down to the ~100 g level, and developments are under way to integrate them into mobile phones. Thus, based on high-volume manufacturability and significant reduction of costs, numerous companies target primarily with NIR instruments a non-expert user community for consumer applica-tions. Especially from this last-mentioned development, a tremendous potential for everyday life can be expected ranging from food testing to detection of fraud and adulteration in a broad area of materials (pharmaceuticals, textiles, polymers, etc.).

However, contrary to the exaggerated claims of many direct-to-consumer companies that advertise their 'scanners' with 'cloud evaluation of big data' this presentation will provide an overview on the realistic application potential of these instruments.

Biography

Heinz Wilhelm Siesler is a Professor of Physical Chemistry at the University of Duisburg-Essen, Germany, with expertise in vibrational spectroscopy in combination with chemometric data evaluation for chemical research, analysis and process control. He has 240+ publications (4 monographs) and presented more than 300 lectures worldwide. Since 2012 he is a Fellow of the Society for Applied Spectroscopy and received several awards (1994 EAS NIR Award, 2000 Tomas Hirschfeld PITTCON NIR Award, and 2003 Buechi NIR Award).

Prior to his academic position he gained industrial experience as section head in molecular spectroscopy and thermal analysis in the R&D Department of Bayer AG, Germany. He also worked as lecturer (University of the Witwatersrand, Johannesburg, South Africa) and Post-Doc (University of Cologne, Germany), after receiving his PhD in Chemistry (University of Vienna, Austria).

The test and application of miniaturized handheld vibrational spectrometers is a special research focus over the last ten years.

KEYNOTE SPEAKER