



Press release

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Industrial thickness gauging of polymer layers at top speed

Fraunhofer ITWM and TOPTICA Photonics have jointly developed an industrial solution for inline coating thickness measurements in non-destructive material testing. Setting a new speed record for thickness gauging, the system accomplishes 1600 measurements per second, and is thus suitable for use on rapidly moving samples in a production line.

Ultra high-frequency electronics enable reliable and efficient quality control in industrial production. Owing to recent advances in laser development and improved manufacturing methods in terahertz electronics, a new generation of powerful terahertz sources and highly sensitive detectors has become available.

Together with TOPTICA, the Fraunhofer Institute for Industrial Mathematics ITWM has developed a novel terahertz system that sets new standards in terms of measurement speed. In combination with ITWM's real-time data processing software, the terahertz platform "TeraFlash smart" becomes a unique instrument for industrial process control. The system records up to 1600 pulse traces per second and thus enables inline layer thickness gauging at unprecedented speed, e.g. on thin, rapidly moving polymer samples in production plants.

The jointly developed terahertz inspection system enables thickness measurements of both single-layer and multilayer samples. Due to its high versatility, the measurement technique is compatible with a wide range of coating thicknesses and geometries. With application-specific adaptations, the system even becomes suitable for thinnest coatings down to approximately 10 micrometers.

Dr. Joachim Jonuscheit, deputy head of the department "Material Characterization and Testing" at Fraunhofer ITWM, illustrates the potential of this concept: "The combination of fast terahertz technologies with real-time data evaluation is unique and opens up a multitude of new, previously impossible inline applications, which we believe to be of great benefit especially for the plastics industry."

More info at: www.itwm.fraunhofer.de www.toptica.com



The TeraFlash smart, a high-speed time-domain terahertz system, measures up to 1600 terahertz pulse traces per second.

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TOPTICA has been developing and manufacturing high-end laser systems for scientific and industrial applications for 20 years. Our portfolio includes diode lasers, ultrafast fiber lasers, terahertz systems and frequency combs. The systems are used for demanding applications in biophotonics, industrial metrology and quantum technology. TOPTICA is renowned for providing the widest wavelength coverage of diode lasers on the market, providing high-power lasers even at exotic wavelengths.

Today, TOPTICA employs 340 people worldwide in six business units (TOPTICA Photonics AG, TOPTICA eagleyard, TOPTICA Projects GmbH, TOPTICA Photonics Inc. USA, TOPTICA Photonics K.K. Japan, and TOPTICA Photonics China) with a consolidated group turnover of € 76 million.