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P17. CONTROL OF THE POLYTETRAFLUOROETHYLENE (PTFE) COATING BY RAMAN MAPPING

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In the coatings industry it is common to incorporate particles into the deposition metal matrix in order to improve properties of the material. The polytetrafluoroethylene (PTFE) is one of the most widely used particles in Ni-P electroless processes because of, among other properties, the high corrosion resistance and lower friction of the resulting Ni-P/PTFE coatings [1]. However, these properties are highly dependent on the composition of the deposit, which must be homogeneous all over the surface, therefore, quality control of the coating level is very important.

One of the simplest way to carry out a non-destructive control of the coated plates is visual inspection, both manual and by using analysis of digital images [2]. However, despite the sensitivity of such methods is good enough to distinguish between coated and non-coated parts, it is not acceptable when it comes to evaluate the composition of Ni-P/PTFE coatings. In this case, spectroscopic methods, in particular Raman spectroscopy, can be beneficial as PTFE has several characteristic Raman bands [3].

In this work Raman spectroscopy has been applied for qualitative analysis of the homogeneity of the PTFE coating on metal plates. A characteristic peak at 734 cm^{-1} has been identified in Ni-P/PTFE coating and used for the control of the coating level. The experiments have shown that the peak is detectable, even for the samples with low thickness of the coating, by using longer exposure time. In order to evaluate spatial distribution of the coating level, the spectra were taken using 10 x 4 grid of sampling points uniformly distributed over the surfaces, which made possible to construct distribution maps.

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P18. COMPARISON OF DIFFERENT ILLUMINATION SYSTEMS FOR MOISTURE PREDICTION IN CEREAL BARS USING HYPERSPECTRAL IMAGING TECHNOLOGY

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Moisture content and distribution is a critical parameter in bars production. A wrong control of moisture can lead to non-conforming products and waste excess on production lines. In the field of hyperspectral imaging, the search for alternative light sources to stabilized-halogen (cheaper and emitting less heat) is a growing necessity for the application of this technology in industry.

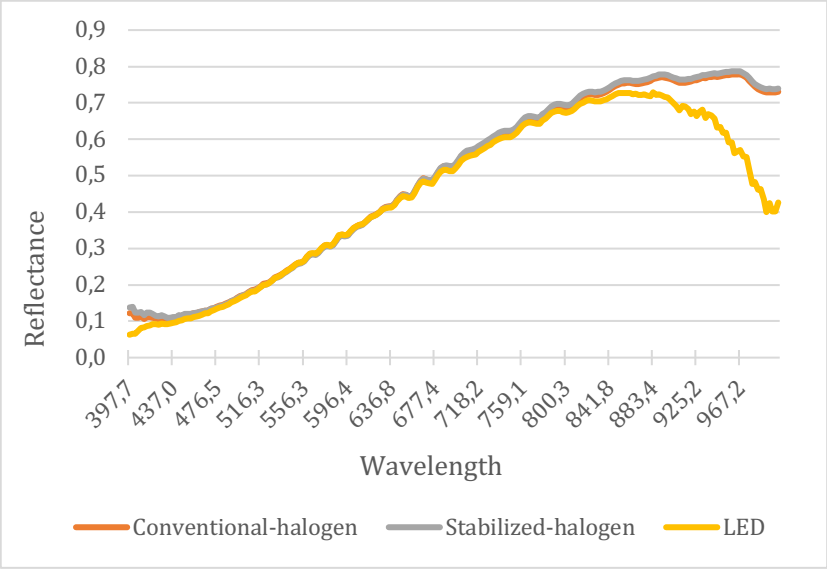

Fig. 1. Spectra comparison between halogen-based and LED-based systems.