HYPERSPECTRAL IMAGING IN INDUSTRIAL SETUPS. ADAPTATION AND IMPLEMENTATION

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Motivated to meet the expectations of the US Food and Drug Administration (FDA), manufacturing companies (especially food and pharmaceutical companies) are investing loads of effort and resources to implement what is called the process analytical technologies (PAT) methodologies. The core of the PAT initiative is the increased process understanding by monitoring of critical performance attributes, leading to better process control and ultimately improved quality. This motivation put forward the usage of computer vision system devices together with advanced multivariate data analysis (a.k.a chemometrics) to increase the control of the quality attributes in production lines in a fast, non-destructive and reliable manner.

Computer vision machines encompass a broad range of camera systems together with new generation of sensors that are able to measure a full spectrum in different electromagnetic fields for each pixel. This generates real-time information that properly analyzed is able to provide real-time solutions to the operators.

This talk will setup the basis of what computer vision machines and chemometrics can offer to real-time product quality assurance nowadays. Their implementation, benefits and drawbacks will be discussed by showing real cases coming from different production sectors: Recycling lines, Pharmaceutical and Food production chains.