

DEVELOPMENT OF COMPACT, LOW-POWER, IN-SITU DIFFRACTION-BASED ANALYZERS FOR PHARMACEUTICAL PROCESSING

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This poster is about several recent developments of in-situ diffraction measurements using compact, low-power systems for industrial applications and scientific studies. A parallel beam diffraction geometry made possible by the use of polycapillary collimating x-ray optics has important benefits for in-situ measurements. Development of low power x-ray sources, x-ray optics and robust and reliable control systems and data management systems also play important roles in such applications. The performance and advantages of low-power analyzers for phase monitoring, crystallization measurements and texture quality control, etc. during pharmaceutical processing will be given in detail. Issues such as the feasibility and limitations of the low power systems and the choice of detectors, sample holders, design of beam path and windows, etc. will be presented. A prototype of a general-purpose, compact, in-situ, low-power diffraction system and its corresponding measurement results will also be described. The potential for application of this developing technology for the pharmaceutical industry will be discussed.