

## **Diffracted Beam Collimators – Extending the Range of Applications for 2D Detectors**

Detlef Beckers, Milen Gateshki, Malvern Panalytical B.V., Almelo, The Netherlands  
Detlef.beckers@malvernpanalytical.com

The unique properties of newer generation solid state 2D detectors - like the combination of high dynamic range, low background and high spatial resolution with no point spread broadening - offer the possibility to extend the application range for 2D detectors on multi-purpose diffractometers. Traditionally 2D detectors were used in application areas that require small illuminated spots on the sample and do not utilize any diffracted beam collimation systems – like for example micro-diffraction or stress analysis on a small sample spot. In recent years application development has been focused on using some of the specific advantages of the improved, solid-state 2D detection systems like the high spatial resolution and large dynamic range so that applications like X-ray topography and Computed Tomography (CT) became available on multi-purpose diffractometers with standard X-ray diffraction components, like slits or mirrors.

In this presentation we are focusing now on examples where diffracted beam collimation systems can extend the range of applications for 2D detectors even further. Examples include multiple simultaneous micro-diffraction experiments and crystallite orientation analysis from a larger illuminated area on the sample. With the used set-up we can investigate the distribution of different phases in inhomogeneous samples or grain orientation distribution without the need of any specific incident beam micro-diffraction optic or sample manipulator (x, y - table). Possibilities and limitations are discussed with measurements from different sample types.