



Ongoing TKD developments

Bastos da Silva Fanta, Alice

Publication date:
2019

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Bastos da Silva Fanta, A. (2019). *Ongoing TKD developments*. Abstract from EBSD 2019, London, United Kingdom.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Ongoing TKD developments

Alice Bastos da Silva Fanta

DTU Nanolab* – National Centre for Nanofabrication and Characterization, Technical University of Denmark, Kgs. Lyngby, DK. (*Formerly: Center for Electron Nanoscopy (DTU Cen))

Since the introduction of Transmission Kikuchi Diffraction, less than a decade ago, our research has focused on exploring the usefulness of the technique in the characterization of nanocrystalline materials in the scanning electron microscope. Several challenges emerged from early investigations: keeping charging under control, reducing drift and avoiding sample contamination were the most common difficulties encountered. A particular challenge we faced, which underpinned our following research efforts, was how to combine high resolution STEM images with the TKD orientation measurements during dynamic experiments. While the optimized geometry and the increased signal yield of the on-axis TKD detector provides a favourable platform for time resolved experiments, the integrated imaging system being located outside the detector screen prevents the acquisition of optimal simultaneous STEM and TKD signals. To eliminate this drawback, we have added a new bright field imaging capability at the centre of the on-axis TKD detector, thus enabling simultaneous acquisition of optimal quality STEM-BF images and orientation maps without detector movement.

In this presentation the development of this new detector configuration (shown in Fig. 1a-d), its advantages and limitations will be presented. Furthermore, challenges in characterizing nanoparticles discussed and some on-going TKD developments will be presented.

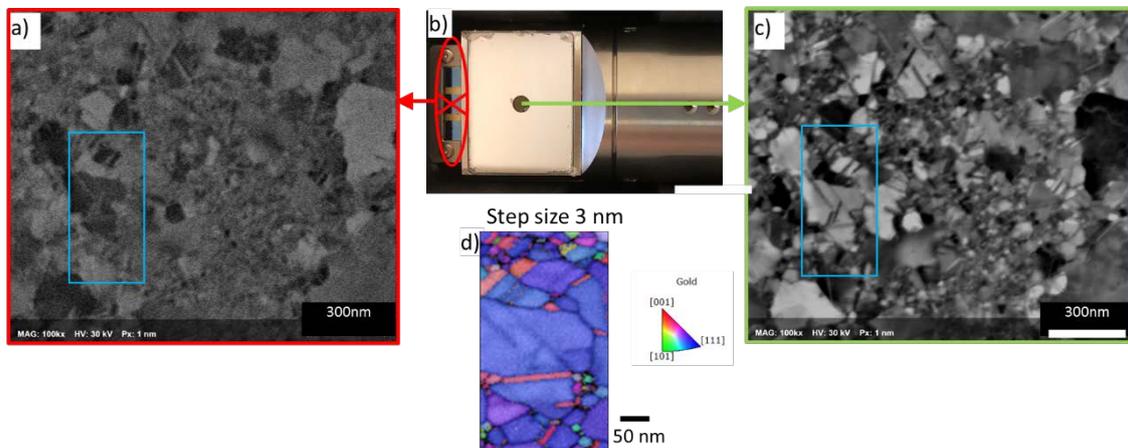


Figure1: STEM images and TKD measurements obtained with the new detector configuration without detector movement. a) STEM-DF image, b) Prototype detector indicating which diodes are used for each image, c) STEM-BF image d) inverse pole figure overlaid with the pattern quality map of the out of plane direction.