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Automated Crystal Orientation and Phase Mapping of Nanocrystals in a Transmission Electron Microscope SERGEI ROUVIMOV, PETER MOECK, Nano-Crystallography Group, Department of Physics, Portland State University, Portland, OR 97207-0751, EDGAR RAUCH, SIMAP/GPM2 laboratory, CNRS- Grenoble INP, BP 46 101 rue de la Physique, 38402 Saint Martin d'Hères, France, STAVROS NICOLOPOULOS, NanoMEGAS SPRL, Boulevard Edmond Machterns No 79, Saint Jean Molenbeek, Brussels, B-1080, Belgium — An automated technique for the crystal phase and orientation mapping of polycrystalline materials in a transmission electron microscope has been developed [1]. This technique is based on template matching of experimental electron diffraction spot patterns to their pre-calculated theoretical counterparts. Precession of the primary electron beam around the optical axis of the microscope during the recording of the diffraction patterns improves the reliability of this technique significantly. Promising results have so far been obtained with this technique for precipitates in heavily deformed austenitic stainless steels [1] and ensembles of iron-oxide nanocrystals [2].

[1] E. Rauch et al. *Microscopy and Analysis*, Issue **93**, November 2008, S5-S8
[2] P. Moeck et al., *Mater. Res. Soc. Proc. Vol.* **1184**, paper 1184-GG03-07 (2009)

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