

## **Texture analysis of pyrolytic carbon by polarized light microscopy, x-ray diffraction and selected area electron diffraction: A quantitative model**

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Many properties of pyrolytic carbon depend strongly on the degree of texture. The texture is usually analyzed by polarized light microscopy (PLM), selected area electron diffraction (SAED) or x-ray diffraction (XRD). PLM allows the fast and simple determination of the extinction angle  $A_e$ . SAED exhibits a higher spatial resolution which is mainly determined by the diameter of the SAED aperture and allows the determination of the orientation angle. XRD is routinely applied to determine domain sizes  $L_c$  and  $L_a$ , interlayer spacing  $d_{002}$  and mosaic spread  $m_s$ .

A quantitative model for the relationship between the extinction angle determined by PLM and the orientation angle determined by SAED was presented and applied to our experimental data [1]. Here the extension of this model to XRD is presented. Samples were investigated by the three complementary methods to be able to verify this extended model. The results allow a quantitative comparison of extinction angles not only with orientation angles but also with XRD data.

- [1] A. Pfrang, D. Bach, D. Gerthsen, Th. Schimmel. Texture analysis of pyrolytic carbon by polarized light microscopy and selected area electron diffraction: A quantitative model for the correlation between extinction angle and orientation angle. Carbon '05, An International Conference on Carbon, Gyeongju (2005).