

StaPaFaB – Standardisation of sample preparation for analysing the geometry of fibres and particles using image processing – Analysis of fibrous particles –

Objective

Scanning technology is used as a laboratory method for image acquisition for raw material and material characterisation for irregular or infrequent questions in laboratory operations. Sample preparation is of central importance for several reasons. The acquisition of images and the calibration of the measurement set-up have so far essentially been covered by device-specific instructions from the manufacturer. The way in which samples are prepared for static image analysis measurement is not covered by these instructions.



Approach and results

In the project, sample preparation for a wide range of materials was standardised by developing optimised sample preparation methods. At the beginning of the work, samples and solutions to unsolved problems relating to sample preparation and evaluation of fibrous particles were compiled. This was followed by a clustering of different requirement cases to define characteristic material groups. After assigning a sample to a material group, questions regarding homogeneity and required sample quantity had to be answered within a given framework. The resulting type of sample preparation was described in detail for the different cases. Based on this, scanning parameters were identified for the individual case groups.

Based on this content, a reference manual for sample preparation for image analysis was drafted together with FIBRE and discussed at a user workshop at the Bremen Cotton Exchange.

As a result of the project, the reference manual was published. It provides a clear description of the standardised sample preparation of the recorded material classes as well as recommendations for useful analysis and evaluation parameters for individual case groups. The sample preparation methods described were also documented on film.



Manual preparation of a fibre sample



The corresponding videos are linked via QR codes in the respective chapter of the reference manual. They can be accessed by users directly at the laboratory workstation.

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The final report on this project is available on request.

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