Contribution ID: **477** Type: **Poster (+) Presentation**

The effect of void structure on the permeability of fibrous networks

Wednesday, 2 June 2021 16:00 (1 hour)

A Kozeny-Carman based model of permeability is extended by incorporating information about the local structure of the void space. Furthermore, it is demonstrated how this added structural information can be retrieved from a three-dimensional digital image of a porous material. The proposed model is validated with both foam- and water-deposited high-porosity laboratory sheets made of CTMP and Kraft fibers. The validation is carried out by comparing the model predictions against computationally determined permeability values. The related fluid flow simulations are executed using the lattice-Boltzmann method together with high-resolution X-ray microtomography images. The proposed model is shown to improve prediction of permeability for the fibrous materials considered: the deviation between the predicted and computationally determined values is no more than 8%.

Time Block Preference

Time Block B (14:00-17:00 CET)

References

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