Contribution ID: **113** Type: **Oral Presentation**

Extraction of pore networks from X-ray images of single wood particles subjected to drying

Wednesday, 1 June 2022 16:30 (15 minutes)

Wood exhibits complex anatomical features that make it hierarchically structred, heterogeneous, and anisotropic material. To obtain realistic predictions of drying behavior of intricate porous media as such by computational means, it is crucial to develop intraparticle models of transport phenomena that account for the spatial heterogeneity of the medium properties and directional anisotropy to convective and diffusive fluxes. Multiple efforts to this end thus need to be undertaken. This work essentially seeks to properly characterize the intricate pore structure of single wood particles dried under different well-controlled conditions. Gravimetric drying experiments are carried out using a magnetic suspension balance. In-situ X-ray tomograms are deployed to determine the porosity, pore size distribution, specific surface area, and structural anisotropy of single particles. An image-based algorithm developed based on the concept of omnidirectional Euclidean distance is utilized for mapping pore networks onto the void space of single wood particles. This method of pore network extraction not only preserves the topological and morphological properties of anisotropic pores in wood samples but also is robust and insensitive to image noise.

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Time Block Preference

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

Participation

Unsure

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