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**Simultaneous moisture and heat transfer in porous systems.** (English) Zbl 1002.80008  
*J. Comput. Appl. Mech.* 2, No. 2, 195-204 (2001).

**Summary:** Based on an examination of the liquid-vapor equilibria and of the mass and energy transfer processes in porous systems, a theory has been developed. The mathematical model is developed for heat and mass transfer analysis of porous media in a convective dryer. Using the model, the calculated transient temperature of the porous material in the dryer agrees well with the experimental values measured. Variations in temperature and moisture content distribution are solved using the finite difference method. The effects of operation parameters, such as temperature and humidity in the dryer, initial moisture content of the porous material, and heat and mass transfer coefficients are examined using this model. By theoretically simulating the drying process, it is shown that during the falling rate period the evaporation-condensation mechanism is the governing mechanism of drying.

**MSC:**

80A20 Heat and mass transfer, heat flow (MSC2010)

76S05 Flows in porous media; filtration; seepage

**Keywords:**

convective drying; moisture and heat transfer; porous system