

ABSTRACT SUBMISSION



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Rotational Motions of Fabric in a Domestic Tumble Dryer under Different Drying Conditions

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ABSTRACT (NO MORE THAN 500 WORDS:)

Rotational motion of fabric in a domestic tumble dryer plays an important role in fabric heat and mass transfer with hot air. However, little attention has been paid to fabric motion in the radial direction owing to a lack of effective and accurate experimental methods. In this paper, a high-speed detection system has been utilized to track a tracer fabric dyed yellow as it is tumbled amongst other fabrics under different drying conditions, aiming at characterizing the fabric motion in a domestic tumble dryer. The experimental results demonstrate that fabric motion is complicated and can be affected by the size of fabric, mass of drying load, but follows specific patterns. A larger active layer, where fabric falls down freely enhancing the contact between fabric and hot air, was observed with the size of 80 cm*80 cm and the mass of 3 kg. The optimum fabric motion for a rapid and uniform drying can be obtained by controlling the fabric size, mass of drying load under monitoring using high-speed detection system.