

ABSTRACT SUBMISSION



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In-situ Complex Evaluation System of Tactile Handle Behavior of Fabric

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ABSTRACT (NO MORE THAN 500 WORDS:)

Tactile handle of fabric is being widely concerned by consumers, especially for the development of natural-like synthetic fibres, such as wool-like, silk-like fibres. For tactile sense of fabric, fabric handle generally refers to the senses of touch, which determines the quality of fabrics and the key evaluation index in the field of textiles production and sales. Fabric handle is a reflection of the physiological sensation produced by touching the fabric by hand and subjective evaluation processed through the human brain.

So, it necessitates to effective measurement methods to fabric tactile handle. Then, the presentation presented a general definition of fabric handle, and introduced current testing methods to fabric handle. Firstly, it clarified popular subjective assessment method to classify fabrics by handle through panels tactile posture to distinguish the tactile sense of fabrics. Secondly, it is now widely accepted that the fabric handle is determined by its mechanical properties so that we can quantitatively characterize fabric handle, the correlating instrument was necessary to be developed. So, several popular objective evaluation methods to test fabric handle were analyzed. Pierce who first started to derive bending length and stiffness formula of fabric to evaluate the stiffness of samples by Cantilever method. Kawabata Evaluation System for Fabric (KES-F) developed by the Hand Evaluation and Standardization Committee (HESC) according to Kawabata's basic design concept and Fabric Assurance by Simple Testing (FAST) designed by the Commonwealth Scientific and Industrial Research Organization (CSIRO) are used for measuring mechanical properties of fabric under low-stress condition. Finally, several new in-situ measurement methods in principle to fabric handle are analyzed, which include the PhabrOmeter fabric evaluation (PFE) system, fabric touch tester (FTT) and the comprehensive handle evaluation system for fabrics and yarns (CHES-FY). These three systems are developed to acquire comprehensive properties derived from the extraction curve of fabrics under a complex low-stress deformation process and could effectively evaluate the handle of fabrics.

The presentation is useful for textile scientists and engineers to understand the developing trend of handle characterization method to fabrics, and it is helpful to develop effective apparatus to better measure fabric handle and to provide a precise guideline to design new handle fabrics so as to have a comprehensive recognition on fabric handle.