Thermal and Mechanical Characterization of High-Performance Polymer Fabrics for Wearable Device Applications

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Objective

Characterize effective thermal conductivity and bending behavior of fabrics constructed from high thermal conductivity polymer fibers

Approach

- Review and identify high thermal conductivity polymer fibers & fabrics
- Measure thermal conductivity (based on IR thermography) and bending stiffness (based on a standard ASTM technique)
- Understand thermal behavior of fabrics when subjected to crease testing and thermal annealing

Impact

- Provided a database of high-performance polymer materials
- Characterized the thermal and mechanical properties of commercially available fabric materials
- Assessed application of high conductivity polymers to aid design of flexible/wearable heat spreaders

Publications


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