VASCULAR GRAFT AND METHOD OF FABRICATING THE SAME

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Inventors: Lih-Sheng Turng, Edward Chen

The Invention

UW-Madison researchers have developed a novel manufacturing technique to enhance the compliance of expanded polytetrafluoroethylene (ePTFE) for vascular graft applications. This new method involves modifying the existing processing procedures by introducing an additional expansion step while using a lower temperature during the first expansion stage. The new process results in the production of highly compliant ePTFE grafts without the need for supplementary additives or inherent material alterations. Tensile testing in both the longitudinal and circumferential directions as well as cyclical tensile testing were conducted to characterize the mechanical properties of double-expanded ePTFE grafts prepared using varying expansion ratios. The double-expanded ePTFE grafts consistently outperformed the prevailing, single-expanded counterparts in both tensile stress tests and cyclical assessments of its elastic compliance. Notably, the double-expanded ePTFE samples exhibited the desirable, biomimetic “toe-region” and an elastic strain capacity of up to 50%, comparable to native vascular materials. Scanning electron microscopy (SEM) imaging was used to examine the morphological characteristics of the wavy fibers within the double-expanded PTFE samples, which contributed to the enhanced compliance that is needed for vascular graft applications.

Tech Fields

- Materials & Chemicals : Polymers
- Medical Devices : Other medical devices

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867