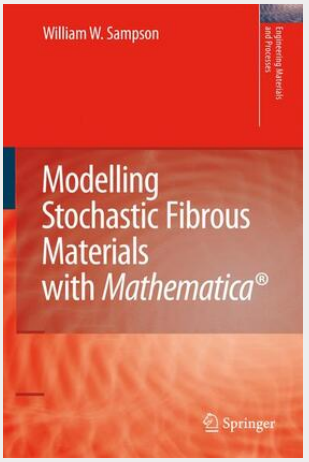
Sampson

Modelling Stochastic Fibrous Materials with Mathematica®



Developments in the use of electrospun fibrous materials, for application in tissue engineering and in carbon fibrous materials in fuel cells, has generated new interest in the dependence of the properties and structure of these materials on those of their constituent fibres. “Modelling Stochastic Fibrous Materials with Mathematica” provides an overview of the structure of stochastic fibrous materials, and the use of Mathematica® to develop models describing their structure and performance. The book introduces the techniques of statistical geometry and probabilistic modelling for non-mathematicians, and assumes no previous experience of Mathematica®. Using accessible notation and by providing examples of Mathematica® code, expressions are derived for the structural characteristics of stochastic fibrous materials providing insights into the ways these depend upon each other and the extent to which they can be modified in the laboratory or in a manufacturing environment.

Recent developments in the use of electrospun fibrous materials, for application as scaffolds for tissue engineering and in the application of carbon fibrous materials in fuel cells, has generated new interest in the dependence of the properties and structure of these materials on those of their constituent fibres. Modelling Stochastic Fibrous Materials with Mathematica® provides an overview of the structure of stochastic fibrous materials, and the use of Mathematica® to develop models describing their structure and performance. Modelling Stochastic Fibrous Materials with Mathematica® provides an introduction to the techniques of statistical geometry and probabilistic modelling for non-mathematicians, and assumes no previous experience of Mathematica®. Using accessible notation and by providing examples of Mathematica® code, expressions are derived for the structural characteristics of stochastic fibrous materials providing insights into the ways these depend upon each other and the extent to which they can be modified in the laboratory or in a manufacturing environment. Modelling Stochastic Fibrous Materials with Mathematica® is a valuable resource for researchers and engineers in industries concerned with electrospinning and the development of nonwoven fibrous architectures for use in composites, fuel cells and filtration applications.

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