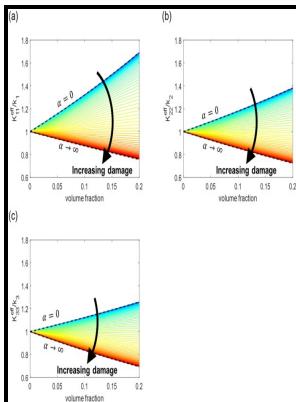


Calculation of effective conductivities of regular composite media.

University of East Anglia - ShieldSquare



Description: -

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Improving the thermal conductivity of epoxy composites using a combustion

Ltd, Japan used as filler in a previous study SEM image of the commercial β -Si 3N 4 powder can be found as Supplementary Fig.

Numerical calculations of effective thermal conductivity of porous ceramics by image

Besides, it is also resulting that the transverse thermal conductivity of the random array model is higher than those from regular array model. Our results may be of particular use for industrial and scientific applications involving heat transfer within porous composite materials taking place in the high-temperature regime. The Lotgering orientation factor was calculated to be 0.

A Multiscale Model for the Effective Thermal Conductivity Tensor of a Stratified Composite Material, International Journal of Thermophysics

Finally, analytical relations are proposed to obtain an efficient model which can be used in a multiphenomenon simulation of the composite structure.

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The SEM images of the CA-SN filler are shown in Fig.

Determination of effective thermal conductivity for polyurethane foam by use of fractal method

Maxwell's equations are coupled with the heat conduction equation considering a heat source term to account for Joule's effect. Here, the fiber volume fraction covers a large range from low 14% to high 54% values and the number of fibers in unit cell changes from 50 to 600.

Effective conductivity of matrix composites and foam materials by self

Now, the formation factor can be calculated directly if the physical properties of the porous media and the electric signal are known.

Effective medium approximations

The effective thermal conductivity is heavily relied on the fraction and spatial distribution of each phase. Additionally, our model allows the calculation of the formation factor without the use of empirical relations, such as Archie's law. The microstructure of polyurethane foam is disordered, which influences the foam heat conduction process significantly.

A self

A recursive algorithm for the thermal conductivity is obtained using the proposed model and is found to be quite simple. More importantly, the numerical predictions from the regular and random models are in better agreement with the experimental results, compared with the theoretical predictions. With the sum term, the combination of these two models can accurately describe a wide array of solid materials.

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