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A Methodology to Model the Complex Morphology of Rough Interfaces

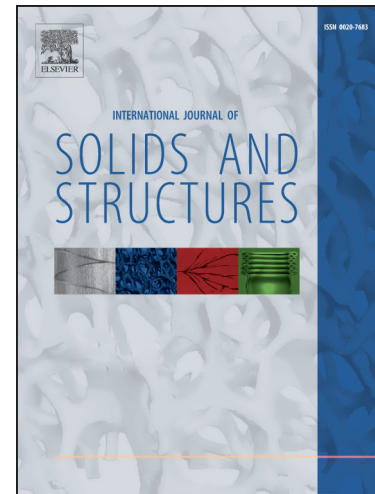
V. Maurel, E.P. Busso, J. Frachon, J. Besson, F. N'Guyen

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# A Methodology to Model the Complex Morphology of Rough Interfaces

V. Maurel\*, E.P. Busso, J. Frachon, J. Besson, and F. N'Guyen

*Centre des Matériaux, Mines ParisTech, CNRS UMR 7633, BP 87, 91003 Evry Cedex, FRANCE*

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## Abstract

A methodology is proposed to model the complex morphology of rough interfaces using Fourier techniques and image analysis. It allows an optimal representation of a rough interface so as to enable a realistic calculation of the local stress and strain fields in the interface vicinity using finite element techniques. The methodology is illustrated through a sensitivity analysis carried out on a thermal barrier coating system. Typical bi-material interfaces with different levels of morphological complexity are described in 2D and 3D using both periodic (sinusoidal) and Fourier functions. The results are discussed in terms of their relative accuracy.

*Keywords:* Interface morphology, image correlation, thermal barrier coatings, finite element modelling.

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\*Corresponding author. Tel.: +33-1-60 76 30 03; Fax: +33-1-60 76 31 50  
E-mail address: vincent.maurel@mines-paristech.fr

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