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Surface in Fatigue/Wear Loadings and Damage Developments

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Message from the Guest Editor

The surface of metallic materials and/or multi-materials play an important role in the life of industrial components and/or systems, especially when they are subject to cyclic transient thermal and mechanical loadings. These solicitations damage the materials through the various mechanisms that are generally in interaction and through coupling with thermo-chemical reactions (oxidation/corrosion). Moreover, the surfaces of the components that are in relative movement with other bodies are damaged by even the more complex interactions between fatigue/wear/oxidation (and/or corrosion). The behaviour of the sub-surfaces is singular. On one hand, dislocations can leave the material by escaping out the free surface and forming extrusions/intrusions or roughening the surface. On the other hand, thermo-chemical reactions with oxygen when coupling with thermo-mechanical straining/stressing can alter the local mechanical properties and resistances.

Keywords

- fatigue
- wear
- metallic materials
- oxidation
- ALM
- behaviour constitutive laws
- life and damage modeling

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Message from the Editor-in-Chief

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