14th World Congress on Computational Mechanics (WCCM XIV)
8th European Congress on Computational Methods in Applied Science and Engineering (ECCOMAS 2020)
July 19- 24, 2020, Paris, France

MULTIPHYSICS AND MULTISCALE MODELLING FOR INDUSTRIAL APPLICATIONS

1200 – MODELLING AND ANALYSIS OF REAL WORLD AND INDUSTRY APPLICATIONS

T. SAYET[*], A. GASSER[*], E. BLOND[*], S. SINNEMA[†]

[*] Univ of Orleans, Univ. of Tours, INSA CVL
Laboratoy of mechanics Gabriel Lamé
Polytech Orléans, 8 rue Léonard de Vinci, 45072 Orléans, France
Thomas.sayet@univ-orleans.fr

[†] Tata Steel Ijmuiden
Wenckebachstraat 1, 1951 JZ Velsen-Noord, Pays-Bas
Sido.sinnema@tatasteeleurope.com

Key words: Multiphysics, Multiscale, Modelling, coupling, finite element analysis, industrial applications.

ABSTRACT

This minisymposium is dedicated to a wide field of scientists who work on multiphysics and multiscale analysis. Techniques and applications used in the modelling of complex problems help researchers in the understanding of several physical behaviour and phenomenon that appear in industrial applications where mechanics, thermal, chemistry and many other science take place.

The proposed minisymposium is meant to provide an opportunity to exchange on the methods used to treat such analysis. Dialogue between experts in numerical simulation techniques and industrial applications communities should be profitable for the understanding of complex coupled simulations and the emergence of their application in the industrial field.

With these aims in mind, contributions from all aspects of engineering applications, with particular attention to structural engineering applications, will be considered. Topics of applications will include (but not be limited to) :

- Recent advances in thermo-chemo-mechanical modelling for refractory materials for steel making.
- Recent advances in thermo-metallic-mechanical modelling for stir welding, friction stir spot welding and welding process.
- Heterogeneous materials with coupled multiphysics behaviour (phase change, chemo-mechanics, nonlinear thermo-mechanics…) including extended homogeneization schemes.
- Multiscale Modeling in Solids and Structures: Coupling Methods from Micro to Macro scales.