COUPLED THERMOMECHANICAL MODELING OF MATERIAL FORMING PROCESSES

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ABSTRACT

Computational Modeling of Coupled Thermomechanical Material Forming Processes has been a strongly active research field in the last few decades. Significant advances in this field have been made as the result of interdisciplinary multi-physics and multiscale research in related fields of computational mechanics, nonlinear constitutive material models, mathematical analysis, and numerical methods. Additionally, during this period, industry has shown a growing interest in incorporating numerical techniques as a valuable tool for material design and process optimization.

The next COUPLED 2021 International Conference will be held in Chia Laguna, South Sardinia, Italy, 13-16 June 2021. It is our pleasure to let you know that we have been invited by the Conference Organizers, to organize an Invited Session (IS) on *Coupled Thermomechanical Modeling of Material Forming Processes*. This IS aims to collect and show up the last developments attained by young and well-known researchers actively working on the field.

Topics addressed in this IS may include, but are not limited to: Computational modelling, Numerical simulation, Thermomechanical models, Material modeling, Stabilization methods, Numerical methods, Finite Element Method (FEM), Particle Finite Element Method (PFEM), Discrete Element Method (DEM), Finite Cell Method (FCM), Isogeometric Analysis (IgA), Additive Manufacturing (AM), Friction Stir Welding (FSW), Welding and associated processes, Casting, Rolling, Hydroforming, Thixoforming, Roll Forming, Sheet blanking and general Sheet metal forming processes.

In addition, the IS organizers have been invited as Guest Editors of a Special Issue on *Computational Modeling of Material Forming Processes*, to be published by the Open Access Journal *Metals* (IF: 2,117). A set of invited full papers presented in this IS will be selected to

be published in this Special Issue, following a regular peer-review process. A special 30% publication discount over APC (Article Processing Charges) will be applied by *Metals* editors to those selected contributions.

REFERENCES

[1] C. AGELET DE SARACIBAR (Ed): Friction Stir Welding and Processing in Alloy Manufacturing, MDPI Books, 2019.

[2] Y. CARRETTA, J.I. BECH, N. LEGRAND, M. LAUGIER, R. BOMAN & J.P. PONTHOT Numerical modelling of microscopic lubricant flow in sheet metal forming. Application to plane strip drawing. International Journal for Numerical Methods in Engineering, (2017) Vol. 112, pp. 203-237.

[3] B. BARROQUEIRO, A. ANDRADE CAMPOS, RAF VALENTE, Integrated methodology for designing structures coming from Additive Layer Manufacturing, Procedia Manufacturing 47 (2020) pp. 425-428