

Proposal for a Mini Symposium

**Title : Numerical Modelling of High Speed or Innovative Metal Forming Processes**

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Numerical modelling of metal forming processes has now reached an undisputable degree of maturity for conventional processes such as bulk forming, sheet forming etc. It is now currently used in industry to design and optimize virtually manufacturing processes.

On the other hand, less effort was devoted to high speed forming processes: machining, high speed forging or shearing and emerging processes among which friction stir welding is a good example. Commercial computer codes for the simulation of forming processes are not always well suited to represent accurately the more complex situations. Therefore, in order to reach the same degree of reliability of softwares, there is a need to develop special features and to tackle with new challenges:

- very high strain and strain rate;
- very strong thermal and mechanical coupling;
- modelling of very thin shear bands;
- computations at a scale where the material grain size cannot be neglected;
- coupling with other physical phenomenon (e. g. laser assisted, electromagnetic coupling).