

PREDICTIVE MODELLING FOR MULTI-PHYSICS PROBLEMS IN ENGINEERING: METHODS, ALGORITHMS AND CHALLENGES TRACK NUMBER 4000

ANDREW BUCHAN* AND JEFF GOMES†

* School of Engineering and Material Science, Queen Mary University, UK
E1 4NS
a.buchan@qmul.ac.uk; <https://www.sems.qmul.ac.uk/staff/a.buchan>

† School of Engineering, University of Aberdeen, UK
AB24 3UE
jefferson.gomes@abdn.ac.uk, <http://alturl.com/zapk4>

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ABSTRACT

Computational and predictive models are essential to many industries as they are instrumental in the optimisation of design and operations, and for the quantification and minimisation of risk and uncertainty. Sectors in energy, aviation, chemical, environment and transportation all rely on the ability to develop accurate and reliable models with the capability to predict and to quantify uncertainties, but all are complicated by several factors ranging from their intricate multi-physics nature, dynamic complexity, detailed geometry, and highly non-linear form.

The main aim of this Symposium is to foster discussion and collaboration among environmental and industrial scientists and professionals on cutting-edge computational modelling technologies for predictive modelling methods applied across industries. In particular, it will cover fundamental research areas on advanced models, sensitivity and uncertainty methods, optimisation and data assimilation for single/multi-physics problems involving structural, fluids, and/or radiation problems.

All application areas in structural mechanics, single/multi-phase flow dynamics and radiation are welcome. Contributions are sought on, but not limited to, the following topics:

- Computational structural/fluid/radiation dynamics;
- Predictive methods for sensitivity and uncertainty quantification and data assimilation;
- Coupling models for multi-physics problems;
- Parallel numerical algorithms for large scale simulations.