

# ATHOR: Training Excellent Young Researchers in the Field of Refractory Materials Used in Iron and Steel Manufacture

ATHOR is an Innovative Training Network Project dedicated to the Advanced Thermomechanical multi-scale mOdelling of Refractory linings, funded by the Marie Skłodowska-Curie Actions of the Horizon 2020 European program and coordinated by IRCER (University of Limoges/FR).



Fig. 1 Kick-off meeting

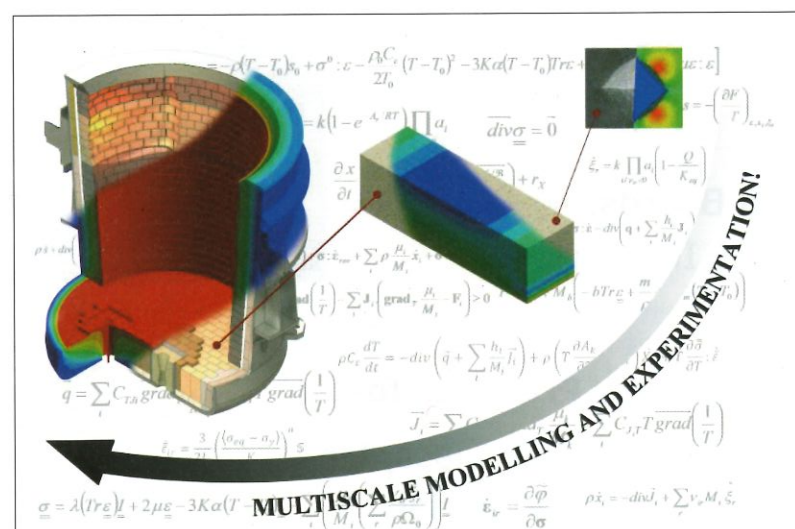


Fig. 2 Multiscale modelling and experimentation

The main target of the project is to train young researchers in cross disciplinary engineering fields for a better understanding of the thermomechanical behaviour of refrac-

tory linings used in iron and steel making applications. With this purpose, a number of training events are scheduled during the project in the period between 2017 – 2021. The project's kick-off meeting took place in Paris/FR on 21 February 2018, involving all academic and industrial partners. In the modern competitiveness scenario of the iron and steel industries, a better understanding about the different failure mechanisms of refractories, including ther-

mal shock, corrosion, creep and fatigue due to thermal cycling, is needed. These are certainly the key aspects to improve the companies' capacity to design optimised materials and linings, in order to decrease operational costs, especially related to energy consumption, and to increase the equipment availability.

In this context, the 15 recruited PhD students will work together within the ATHOR program to develop innovative modelling and new experimental techniques, with a special application focus on steel ladle.

The project's consortium is composed of 7 academic and 7 industrial partners ([www.etn-athor.eu](http://www.etn-athor.eu)), and is constantly expanding. In this way, SAFRAN has recently joined the project.

The 1<sup>st</sup> training event of the ATHOR Consortium took place at the Montanuniversität Leoben/AT, from 11–15 June 2018, and was dedicated to fracture mechanics, where participants could discover how different material's parameters contribute to its fracture behaviour, and learn how to characterise and model the creep behaviour of refractories at high temperature. Visits have also been organised to RHI-Magnesita Technical Center Leoben (TCL) and production site in Veitsch/AT.

In the coming 61<sup>st</sup> International Colloquium on Refractories, that will take place in Aachen/DE, 26–27 September, the ATHOR network will be present via the RWTH-Aachen/DE stand, and the PhD students will participate in the poster section showing the very first results of their PhD works. The same week will also be marked by another training course on corrosion of refractories, prepared for ATHOR members by the RWTH Aachen University, and by a visit to the TataSteel plant in IJmuiden/NL.

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