

Facing new Challenges for High Temperature Processes

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High temperature reactions represent an important topic for many technological processes, ranging from steel manufacture to steam power plants or even energy recovery in waste incineration plants. During the past years, many efforts have been taken to understand the mechanisms of high temperature corrosion and to optimize the corrosion resistance of certain materials.

In order to perform well-defined experiments, great care needs to be taken for an accurate definition of process parameters, especially under fast changes of exposure conditions like sample temperature and corrosive atmosphere. Furthermore, in-situ monitoring of process relevant parameters and gas composition appears to be essential [1].

Recent developments at the Max-Planck-Institute für Eisenforschung GmbH will be presented, which cover many of the above mentioned aspects for high temperature experiments. The in-situ MS detection of volatile species [2] in close proximity to the sample surface will be presented and reasonable ways to minimize buoyancy effects during the initial steps of thermogravimetric measurements at elevated temperatures will be outlined [3].

- [1] M. Auinger, D. Vogel, A. Vogel, M. Spiegel, M. Rohwerder, *Rev. Sci. Instr.* *accepted*
- [2] M. Auinger, A. Vogel, V.G. Praig, H. Danninger, M. Rohwerder, *Corros. Sci.* *submitted*
- [3] *Early Stages of High Temperature Corrosion in Steel Processing and Manufacturing*, M. Auinger, A. Vogel, D. Vogel, M. Rohwerder, Scientific Report 2012 - Max-Planck-Institut für Eisenforschung GmbH (Selected Highlight).