

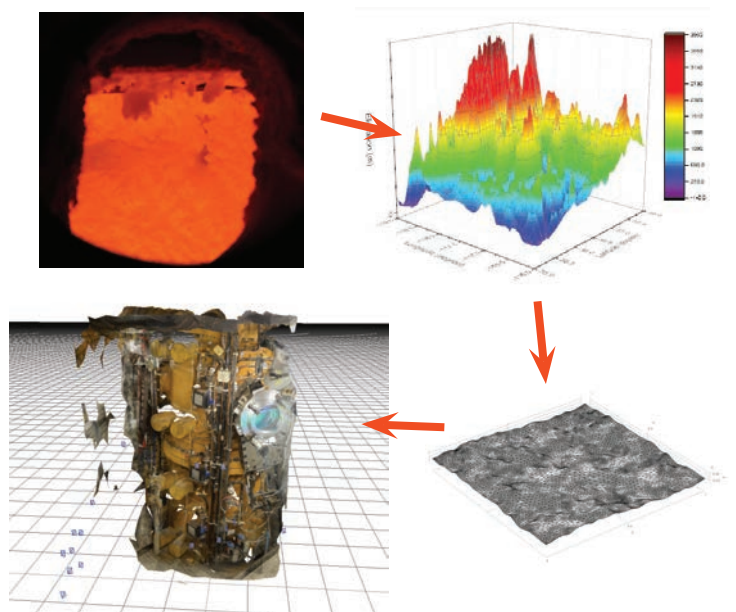
# Bachelor/Master Thesis

## Reactor surface 3D reconstruction by stereo photometric methods for scientific applications.

The topology of industrial surfaces such as the internal walls of combustion chambers and reactors are complex and are not often taken in to account in numerical simulations. Complex surface geometry in consequence can increase dramatically the cost of such simulations. Also, the impact from surface topology on heat transfer and flow pattern is evaluated *a posteriori* in fully working systems. Therefore is it of high importance to understand the interactions between reactor walls and flows. So as a first step, the structure of inner surfaces must be characterized in detail.

The present bachelor/master thesis intends to establish the theoretical basis and practical implementation of a 3D surface reconstruction method employing the state of the art in stereo photometric reconstruction employing RGB Digital cameras.

The objectives and complexity of the work are to be tailored based on the technical background of the student and available time. The first stage of the work will be dedicated to conducting a bibliographical review of the state of the art of reconstruction algorithms and photometric mapping methods. Based on this, the most suitable algorithm or available code will be chosen and validated employing a simple benchmark case. Finally, by applying the gathered knowledge, the detailed photometric mapping and full mesh reconstruction of the inner reactor surfaces is expected to be successfully achieved.



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Beginn

Ab sofort/Immediately

Voraussetzungen

Scripting/code experience (MATLAB).  
 Motivation to conduct fascinating new work and creativity.  
 Can work independently.