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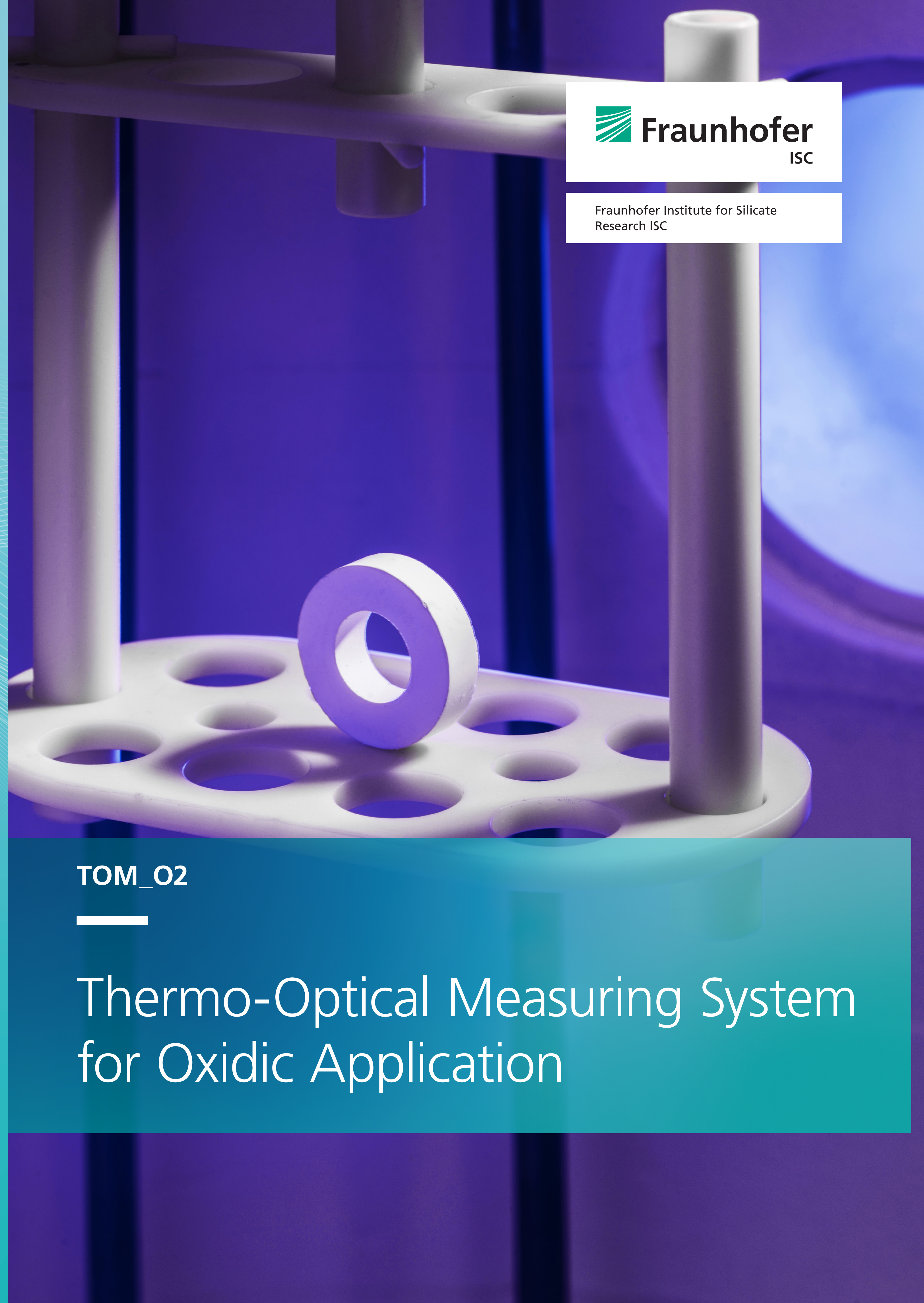

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TOM_O2

Thermo-Optical Measuring System for Oxidic Application

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TOM O2

Measurements on ceramics and glass

Measurements on ceramics

Ceramics are densified and strengthened by sintering. This process determines the **quality of the final product** – and considerably contributes to **production costs**. The sintering shrinkage is the most telling indicator for the sintering state. Close monitoring of shrinkage and warping during firing can be used to **optimize firing conditions.**

Our tasks

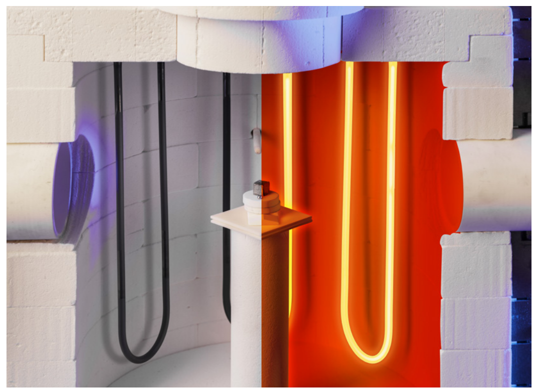
- Monitoring of the sintering shrinkage without mechanical impact of the measuring device on the samples.
- Recording of any warping or adherence of the sample during sintering even if the sample shape is quite irregular.
- Measuring of creep properties under well defined constant or cyclic loads.

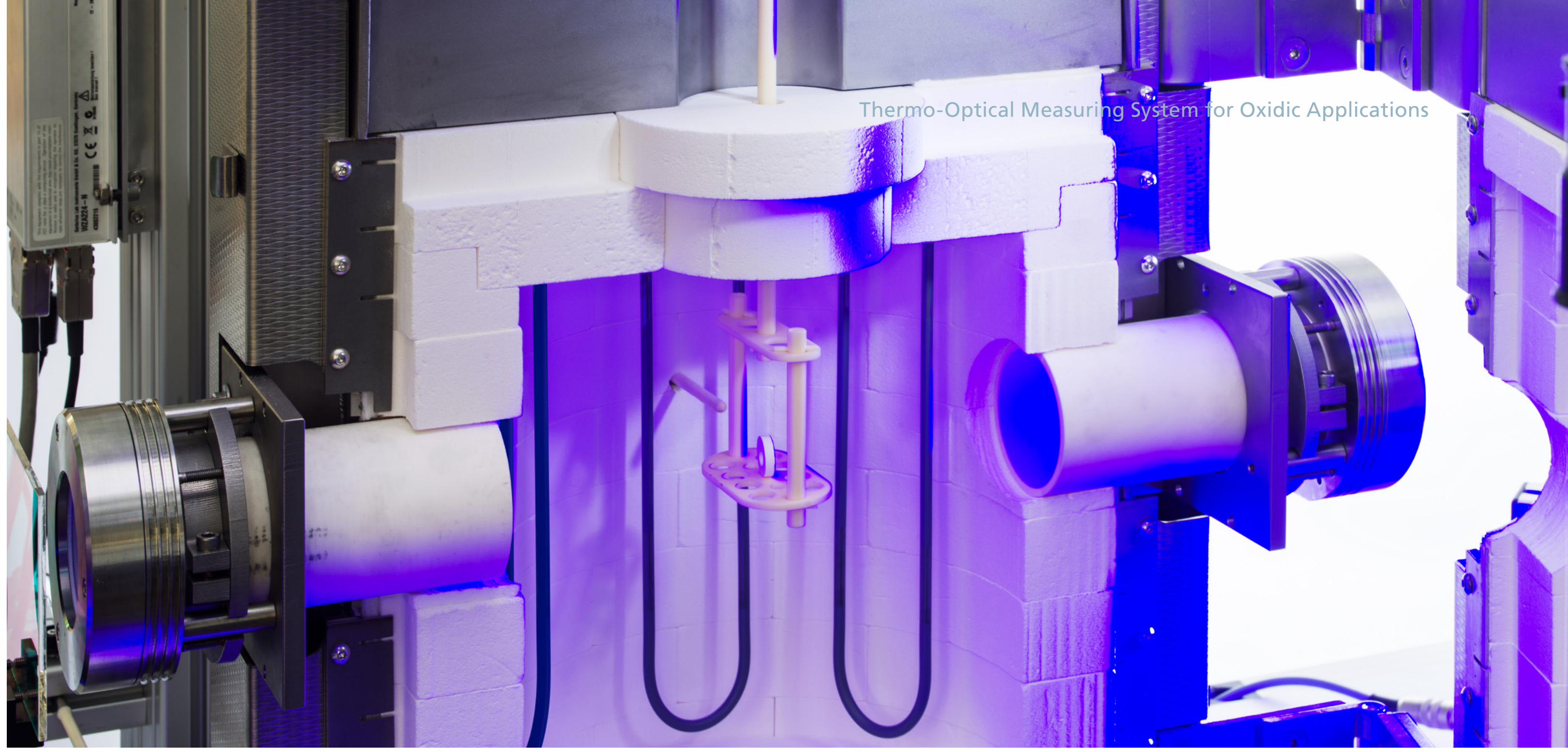
Measurements on glass

Glass is molten and shaped at low viscosities. Numerous **thermophysical data** are required on the way from the raw material to the melt and from there to the final product to ensure the **precise design of the thermal processes**. The measuring of thermophysical properties of glass around the softening temperature is particularly difficult.

Our tasks

- Determination of the expansion coefficient in the range from low temperature to melting temperature, i. e. around the softening temperature
- Monitoring of the melting behavior as well as the wetting of refractories and metallic molds by the glass melt at high temperatures.
- Gravimetric determination of gas loss due to decomposition of raw materials during the melt formation.



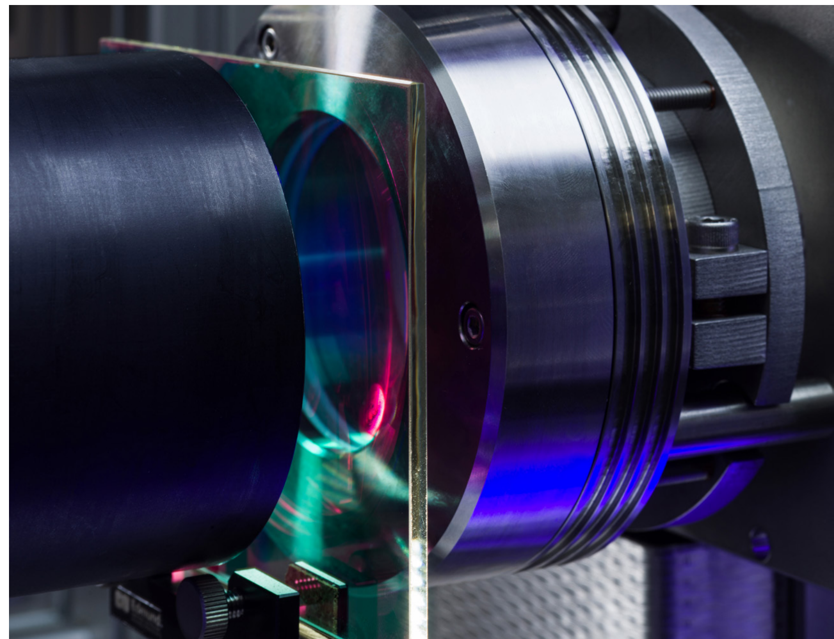


Our solution: TOM_O2

TOM_O2 is a follow-up model of its successful predecessor TOMMI with **improved performance and more flexibility**. It combines a high temperature furnace with an optical dilatometer. The crosslight silhouette of the sample is recorded by a CMOS camera. A **special optical system** provides **distortion free imaging** – even if the sample slightly shifts during the heat treatment, e. g. due to thermal expansion.

Dimensional changes of the sample are registered by a **purpose-made image analysis software;** the sample may be of any shape as long as its complete silhouette remains within the dilatometer window. Measurements are taken once every second so that rapid changes can be registered. Furthermore, **melting and wetting phenomena** can be investigated by examining the wetting angles and infiltration kinetics.

TOM_O2 is controlled by a standard PC and operated via a comfortable user-friendly graphical user interface. Besides the data on dimensional changes, single images as well as time-lapsed videos of the thermal treatment can be obtained. The resolution of TOM_O2 can be down to 0.4 µm with **very high reproducibility**. It is optionally available with several loading stages and a balance for simultaneous gravimetric investigation of the sample.



TECHNICAL DATA

Height x depth x length:	1300 x 300 x 1000 mm
Maximum temperature:	1750 °C or 1200 °C (GLASS-TOM for glass applications)
Measuring window diameter:	adaptable from min 3 mm to max 60 mm
Resolution:	0.4 µm

Optical dilatometer for the control of thermal processes at oxidic atmosphere