

# APPLICATION SHEET

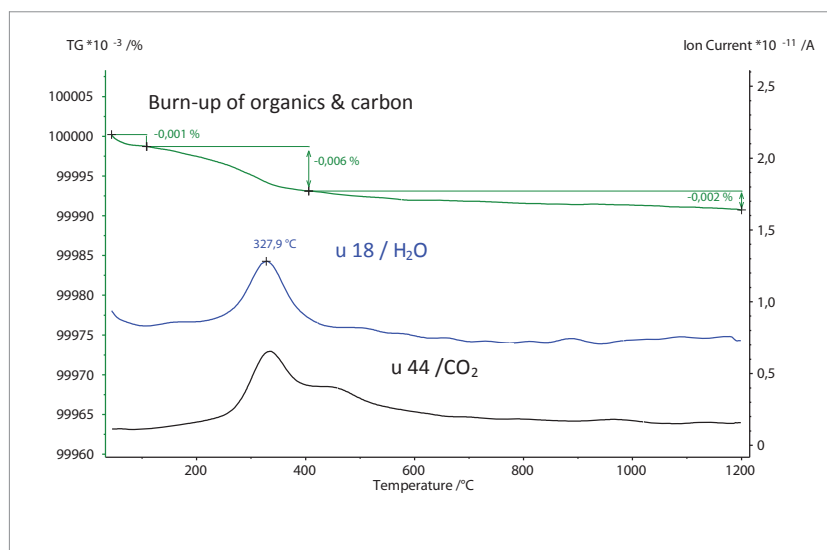
## STA Accessories – Large Crucibles

# Burn-up of Tiny Organic and Carbon Contents and their Detection by QMS Coupling

For TGA measurements on inhomogeneous materials or ones with low densities (e.g., foams), very large crucibles are available.



Al<sub>2</sub>O<sub>3</sub> crucibles with different volumes (left: TGA-DTA with 0.9 ml, middle: TGA with 5 ml and right TGA with 3.4 ml), see also *Accessories for Differential Scanning Calorimeters and Thermobalances*



Quartz sand (4099.46 mg) was tested here in the alumina beaker crucible for TGA measurements with the STA 449 **F3 Jupiter**® coupled to the QMS 403 **Aëolos**. Release of organics (H<sub>2</sub>O, CO<sub>2</sub>) detected by QMS is correlated with the mass loss of the sample

Resolution for the smallest of TGA steps can be achieved by increasing the sample mass. In this example, quartz sand was heated at a rate of 20 K/min in synthetic air. The results demonstrate that extremely small mass-loss steps can be resolved by using a sample mass of more than 4000 mg.

The evolved gases in this example were detected using our QMS 403 **Aëolos**® coupled to the STA 449 **F1 Jupiter**®. The second mass-loss step amounts to 0.006% and is mainly due to the burn-up of organics and carbon (CO<sub>2</sub>: u 44 and water: u 18).