

Investigation of a Venetian glass sculpture by 3D-microCT

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The exhibition of the Leipzig Grassi Museum of Applied Arts possesses a glass figure about 15 cm in height, depicting a man in Roman commander's dress. Noticeable feature of the figure are the bright and contrast rich colours and the opacity of the individual glass layers. The sharp borders between the different glass types point towards a multi step manufacturing process. On the origin of the figure no secure knowledge is available. The assignment of the figure to the glassworks of Murano is supported by the comparison with a similar product of the same provenance. The object is about from the 18th century. The status of the artefact requires an extensive restoration prior presentation in an exhibition. 3D- μ CT offers not only the possibility of a non-destructive material characterization, but delivers in combination with a bouquet of mineralogical, chemical and analytical methods valuable knowledge on the production process and the cultural background as well. At the position of the missing right hand a corroded iron wire appears, suggesting that all glass layers were pasted on a supporting wire grid. Visualization of this grid was the primary aim of the CT-scan. Using a mobile XFA the qualitative composition of the glass was revealed. Some damage of the figure was repaired in the past with an undefined filling. To improve the restoration result the quantitative phase composition of the coloured glasses was determined. Putting these results in the SciGlass 6.6 software relevant mechanical and optical properties for the restoration (e.g. viscosity and index of refraction) can be calculated. UV-VIS spectroscopy and EMPA measurements were performed on small chips of the glass and the wire grid, revealing that the grid is made from iron and copper wires. Their corrosion products identified by XRPD delivered hints to the kind of damage processes going on in the past.

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