



## Assessing the photosensitivity of coloured architectural fragments from the Near East in the collection of the Vorderasiatisches Museum, Berlin

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Beneficiary: Stefan Röhrs, Rathgen Research Laboratory – National Museums in Berlin, Germany, s.roehrs@smb.spk-berlin.de

Host: Boris Pretzel, Science Section, Conservation Department, Victoria and Albert Museum, United Kingdom, boris.pretzel@vam.ac.uk

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The Pergamonmuseum situated on the Museums Island in Berlin has been undergoing staggered renovation work. The renovation works include also renewal of the lightning system of the galleries, which will be changed for a more energy efficient system. Light levels in the galleries are chosen with respect to a good visibility of the objects for the visitors and at the same time respecting the photosensitivity of the objects on display. Some glazed ceramic artefacts from the same archaeological context as the Ishtar Gate and Processional Way from Babylon from the Vorderasiatische Museum, Berlin have shown an unexpected high photo sensibility in micro-fading tests. The objects are heavily weathered and have been consolidated in past and present with various organic binding media to prevent the loss of material.

The light induced colour change of several architectural fragments was reassessed by a second spectroscopic method the Science Section of the Conservation Department, Victoria and Albert Museum by the use of a 'mini-fading' device. The 'mini-fading' makes use of a similar approach as the micro-fading spectrometer but it is different in some significant details. 'Mini-fading' uses a tungsten halogen source (typical, at the time that it was constructed, for sources used in museums) with about 40 000 lux which is less intense compared to the micro-fading spectrometer (3 to 6 Mega lux) but with 8 mm diameter the irradiated area is 400x times larger. The colour change of the sample is monitored by reflection measurements using a dual-beam UV-visible/near infrared spectrophotometer (Hitachi U4000).

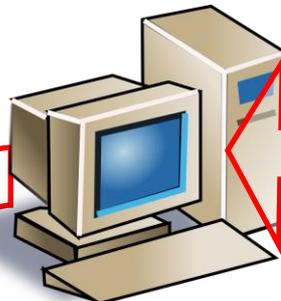
The data is processed to extrapolate the colour change (in CIE DE2000) of the object versus the light exposure in Mega lux hours until a just noticeable colour change is reached. All uncertainties are derived directly from spectral uncertainty of the underlying measurements, ensuring that the uncertainty bounds very well characterised and allowing significant extrapolation of the results with a high degree of confidence



Measurement on object



Spectral mini-fading data in the vis- and NIR-range



Data extrapolation and estimation of uncertainty bounds

