

# Neutron Activation Autoradiographs –the Technique

*Tuesday, 10 September 2013 09:00 (30 minutes)*

In collaboration with the research reactor in Berlin, the Helmholtz-Zentrum für Materialien und Energie, the Gemäldegalerie Berlin is the only institute worldwide, which systematically employs the method of Neutron-Activation-Autoradiography to analyze paintings. Today we have investigated about 70 paintings. This is an effective, non-destructive, however, exceptional method for the investigation of paintings and paint techniques. It allows the visualization of structures and layers beneath the top surface and, in addition, enables the identification of elements contained in the pigments. The instrument B8 at the research reactor BER II is dedicated to this research. It allows to irradiate and activate artistic, technical, or geological items (foils, stones etc.) and other materials with cold neutrons having a flux of  $\Phi_n=1\cdot 10^9$  cm<sup>-2</sup>s<sup>-1</sup> and to investigate it afterwards with imaging plate technique and/or to analyze it with gamma-spectroscopy.

The irradiation process, the investigation of the induced radioactivity and the possible identification of the pigments will be presented.

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