

EINLADUNG

zum

VERA - SEMINAR

von

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**Negative ion formation  
in a Middleton sputter source**

The Middleton cesium-beam sputter source has been a standard tool for negative ion production since the 1970-ies, yet the ion forming mechanisms are not fully agreed upon.

This talk will show two different experiments performed on the sputter source of the VERA Laboratory, aimed to achieve a suppression of interfering sulfur ions during chlorine production for  $^{36}\text{Cl}$  measurements. The goal of the first experiment was to remove negative sulfur ions using resonant charge transfer in a small volume filled with  $\text{NO}_2$  gas directly in front of the sputter sample. The second experiment intended to selectively photo-detach the more loosely bound negative sulfur ions using a strong continuous laser directed on to the sputter target. The unexpected outcome from these experiments initiated a third experiment of a more fundamental nature. To gain more knowledge about the negative ion formation process an optical spectroscopic study of the radiation from the sputter source was performed at the new Ion Laser Interaction System (ILIAS) Laboratory at VERA. Spectra of radiation from three different cathode materials were acquired.

Two theories of negative ion formation and the result from the three experiments will be presented with focus on the optical spectroscopy study.

**Donnerstag, 26. April 2012, 16:30 Uhr**

**1090 Wien, Währinger Straße 17, "Kavalierstrakt",  
1. Stock, Victor-Franz-Hess Hörsaal**