



EINLADUNG

zum

VERA - SEMINAR

von

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## Slow anion beams in the spotlight of a green laser

The separation of rare trace isotopes from their isobars, i.e. atoms or molecules of very similar mass, is the major challenge of sensitive mass-spectrometric methods. The experimental setup at the Vienna Environmental Research Accelerator (VERA) was expanded with an ion cooler on the injection side, which allows for additional isobar suppression via interaction of negative ions (anions) with a laser beam. The anion beam is decelerated electrostatically and in collisions with He buffer gas inside a radio-frequency quadrupole. Element-selective photodetachment of the slowed-down ions is achieved by overlapping the ion beam with an intense photon beam. Our first application of the combined setup was to separate the particularly interesting isobar pairs  $^{36}\text{Cl}^-/^{36}\text{S}^-$  and  $^{26}\text{AlO}^-/^{26}\text{MgO}^-$  using 2.33 eV photons (532 nm from a Nd:YAG laser). In these experiments we have observed various surprising disappearances of molecules as well as emergences of new molecular anions from the ion cooler. As the photodetachment on the low-energy side makes high beam energies redundant for isobar separation we can turn our focus also on setups to measure  $^{26}\text{Al}$  and  $^{36}\text{Cl}$  at lower beam energies. I will show results for charge states 2+ or 3+ on the high-energy side of the accelerator with special regard to the separation and suppression of the numerous potential m/q interferences.

**Donnerstag, 18.05.2017, 16:30 Uhr**

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