der the influence of a combined DC/RF electric field with presence and absence of a strong magnetic field. The simulated ion trajectories indicate the possibility of this design to confine ions in the 3D region inside the trap for further processing events, such as radial ion excitation and axial ion ejection. Therefore, the device can be useful for both ICR and quadrupole ion trap techniques. The new design has a specific geometry with concentric ring electrodes of different diameters. The cell is axially segmented into five different ring electrodes. This establishes three effective stability regions inside the detection region for trapping and detecting both ion polarities simultaneously under ICR conditions. 3D analysis of electric potential distribution inside this new design gives explanation for some interesting and unusual ion behaviour discerned in this trap.

Reference: Characterisation of a New Open Cylindrical ICR Cell for Ion-Ion Collision Studies. B. Kanawati, K. P. Wanczek, Int. J. Mass Spectrom. (2007),DOI:10.1016/j.ijms.2007.09.007

MS 2.7 Mo 18:15 3E

Photoionization and Fragmentation of Closo-Carboranes — •Norman Frank Riehs[1], Hans-Werner Jochims[1], Ertugrul Serdaroglu[1], Peter A. Dowben[2], and Eckart Rühl[1] — [1]Physikalische und Theoretische Chemie, Freie Universität Berlin, Takustr. 3, 14195 Berlin — [2]Department of Physics and Astronomy, University of Nebraska-Lincoln, NE 68588-0111, U.S.A.

Photoionization and photon-induced fragmentation of isomeric icosahedral closo-carboranes by monochromatic synchrotron radiation is reported. Vacuum ultraviolet radiation from the 3 m NIM-I beam line at the storage ring BESSY (Berlin) was used for the experiments. This allows us to measure ionization thresholds and fragmentation patterns at various photon energies. In spite of complexities that result because of the natural isotope abundance of boron and photon-induced loss of hydrogen, the distinct mass spectrometry fragmentation patterns have been partially identified. At low photoionization energies, we find that the loss of atomic hydrogen corresponds to even numbers of hydrogen atoms. Distinct differences between the isomers of closo-dicarbadodecaborane (orthocarborane (1,2-$C_2B_{10}H_{12}$), metacarborane (1,7-$C_2B_{10}H_{12}$), paracarborane (1,12-$C_2B_{10}H_{12}$) are observed indicating that the loss of pairs of hydrogen depends on the carbon placement within the carborane cage. Furthermore, fragmentation of the cage into singly charged fragments of variable mass is observed along with stable doubly charged intact carborane cages. These results are discussed along with plausible fragmentation mechanisms.

MS 2.8 Mo 18:30 3E

A novel Penning trap mass spectrometer for fundamental studies — •Sebastian George[1,2], Frank Herfurth[2], Jens Ketelaer[1], Szilard Nagy[1], Wolfgang Quint[2], and Klaus Blaum[1,2] — [1]Institut für Physik, Johannes Gutenberg-Universität Mainz, 55099 Mainz, Germany — [2]GSI, 64291 Darmstadt, Germany

A novel five-Penning trap system designed for high-precision mass measurements on highly-charged stable and radioactive nuclides is currently planned and under construction at the University of Mainz in collaboration with GSI Darmstadt. High-precision mass values are required in many fields of physics and the required uncertainty ranges from 10^{-7} in nuclear physics down to below 10^{-11} in metrology and for the determination of fundamental constants. To this end we develop a new five-trap mass spectrometer with single-ion-sensitivity. It is a combination of one precision trap for the actual mass measurement, two preparation traps for ion storage and cooling, and two monitoring traps for a continuous B-field observation. It will be dedicated to highly-charged isotopes delivered first by the EBIT at the Max-Planck-Institut of Heidelberg and later after full commissioning by the HITRAP facility at GSI. The setup of the trap itself is finished and will be presented together with the present status of the project.

MS 3: Accelerator Mass Spectrometry (AMS) I

Zeit: Dienstag 8:30–10:15 Raum: 3E

MS 3.1 Di 8:30 3E

AMS in Munich — •Georg Rugel[1], Iris Dillmann[1,2], Thomas Faestermann[1], Gunther Korschinek[1], Klaus Knie[3], Johannes Lachner[1], Moumita Maiti[1], Mikhail Poutivtsev[1], and Anton Wallner[4] — [1]Technische Universität München, Fakultät für Physik, D-85747 Garching — [2]Institut für Kernphysik, Forschungszentrum Karlsruhe, Postfach 3640, D-76021 Karlsruhe — [3]Gesellschaft für Schwerionenforschung, D-64291 Darmstadt — [4]Vienna Environmental Research Accelerator, Institut für Isotopenforschung und Kernphysik, Universität Wien, A-1090 Wien

The combination of the high energy available at the Munich tandem accelerator with the gas-filled analyzing magnet system (GAMS) allows to measure isotope ratios down to sensitivities of 10^{-16} (even 10^{-20} with respect to the bulk material). This unique sensitivity – especially in the mass region around A= 60 – allows a lot of applications like cross section measurements for astrophysically relevant reactions. Examples for measurements with a focus on astrophysics and geology will be presented.

MS 3.2 Di 8:45 3E

Aufbau eines 6MV Beschleuniger-Masenspektrometers an der Universität zu Köln — •Alfred Dewald[1], Martin Melles[2], Jan Jolie[1], Andreas Zilges[1], Michael Staubwasser[2], Ulrich Radtke[3], Jürgen Richter[4] und Friedhelm von Blanckenburg[5] — [1]Institut für Kernphysik, Universität zu Köln — [2]Institut für Geologie und Mineralogie, Universität zu Köln — [3]Geographisches Institut, Universität zu Köln — [4]Institut für Ur- und Frühgeschichte, Universität zu Köln — [5]Institut für Mineralogie, Universität Hannover

Die Deutsche Forschungsgemeinschaft (DFG) fördert im Rahmen einer Großgeräte-Initiative den Bau eines 6 MV Beschleuniger-Massenspektrometers, das vor allem deutschen Nutzern aus den Geowissenschaften, der Umweltforschung und auch aus anderen Disziplinen, wie zum Beispiel der Astrophysik, zur Verfügung stehen soll. Die Messung der kosmogenen Nuklide 10-Be, 14-C, 26-Al und 36-Cl soll Schwerpunkt des künftigen Aufgabengebiets der Einrichtung sein. Darüber hinaus sollen aber auch schwere Isotope bis hin zu 244-Pu gemessen werden können. Die Anlage wird im Beschleunigerbereich des Instituts für Kernphysik (IKP) der Universität zu Köln aufgebaut und von der Universität zu Köln betrieben. Das Konzept, der Aufbau des Spektrometers im IKP und der aktuelle Status des Projekts werden vorgestellt.

MS 3.3 Di 9:00 3E

The French 5 MV AMS facility ASTERisques - Status after the first year — •Didier Bourlès[1], Maurice Arnold[1], Georges Aumaître[1], Lucilla Benedetti[1], Régis Braucher[1], Frédéric Chauvet[1], Robert C. Finkel[1,2], and Silke Merchel[1] — [1]CEREGE, CNRS-IRD-Université Aix-Marseille, F-13454 Aix-en-Provence, France — [2]CAMS, Lawrence Livermore National Laboratory, Livermore, CA 94550, USA

A new 5 MV accelerator mass spectrometry (AMS) system, fully dedicated to applied research, has been installed at CEREGE [1,2]. Since its acceptance test in March 2007, we have successfully established routine measurement conditions for the long-lived cosmogenic radionuclides ^{10}Be and ^{26}Al. Using ^{9}Be carrier derived in our laboratory from phenakite crystals originating from a deep mine, we determined a background-level as low as 5x10^{-16} (^{10}Be/^{9}Be).

For ^{41}Ca (extracted as CaF_3^-) and ^{129}I, background levels are in the range of 2x10^{-14}, whereas under optimum conditions the ^{36}Cl background can reach 3x10^{-16} (^{36}Cl/^{35}Cl). The total transmission varies from 0.02 (^{36}Cl with a post-stripping absorber foil) to 0.38 (^{26}Al).

The main focus of applications has been on geological and environmental topics with the broad goal of using isotopic techniques to help understand the timing and rates of processes in the earth system. Work so far has included reconstruction of past climate, determination of the rate and timing of seismic activity, volcanic eruptions and rock falls.

[1] M. G. Klein et al., NIMB, submitted. [2] D. Bourlès et al., DPG Frühjahrstagung AK AMOP (2007) MS3.2.

MS 3.4 Di 9:15 3E

^{36}Cl measurement program at Zürich 6 MV tandem accelerator — •Vasily Alfimov and Hans-Arno Synal — Ion Beam Physics, Paul Scherrer Institute and ETH Zurich, 8093 Zurich, Switzerland

Routine measurements of ^{36}Cl at Zürich 6MV tandem accelerator cover