Ion micro-beam at NPI Řež for IBA analyses and ion beam writing applications

Vladimír Havránek

Nuclear Physics Institute, Czech Academy of Sciences (NPI), 250 68 Rez, Czech Republic

Ion micro-beam line was first set into the operation in NPI in 2009. It is situated at +10deg line of 3MV TANDETRON 4130MC electrostatic accelerator. It is based on OM quadrupole triplet with QMDAQ acquisition system. Recently we have installed a new target chamber with 3D piezoelectric positioning with submicron resolution and full 360 deg. step motor rotation with 0.05 deg. step resolution. The micro-beam is used both for analysis and ion beam writing applications. It is equipped with two PIXE detectors (25mm² SDD and 80mm² Si(Li)), two RBS detectors (300mm² annular and 50mm² PIPS) and 100mm² PIN diode for STIM analysis at 0 deg. scattering angle. The beam resolution in high current mode (100pA) for PIXE is usually 1-2µm and can be reduced below 500nm in low current STIM mode. Routinely we can focused H, He, C, N, O and even Cu ions for specific applications. We have also develop an alternative acquisition and beam scan software for collecting the list mode spectra from XIA PIXIE, XMAP and Amptek DP5 digital modules and advanced

list mode spectra from XIA PIXIE, XMAP and Amptek DP5 digital modules and advanced applications in IBW. Several examples of micro-beam utilization in our laboratory will be presented.