

Formation of micro-beams by capillary collimation

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Capillaries are a simple and affordable tool to produce a low current MeV ion microprobe. The beam spot size is essentially determined by the outlet diameter of the capillary and is in the range of a few micrometers. Due to the small achievable beam currents capillary micro-beams are especially suited for STIM or irradiation experiments. However, PIXE is possible as well and even RBS and NRA have been reported with this type of beam. Owing to the small gas leakage through the capillary opening, ion beams can be taken into air without any membrane. The setup procedure of the capillary beam is fast and simple and virtually independent of particle type and energy. Since the exit point of the ions is well visible under a microscope, aiming is usually simpler than with a conventional microprobe. The issue of collimation and focussing properties of conical capillaries will be discussed as well.