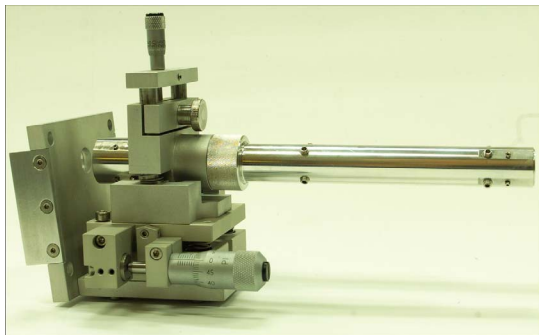


A micro beam collimator having an iris like capillary for compressing beams

Description

This invention relates to X-Ray characterisation techniques. A method of utilising polished heavyweight metallic mirrors to form a closed elongated geometry, similar to a capillary tube, is proposed. Fine glass capillaries are widely used in the formation of X-ray micro beams to provide high resolution in material characterisation. This concentration of X-rays is based on the principle of total multiple reflections of X-rays from the smooth internal capillary surface. By using heavyweight metallic mirrors, the system achieves higher efficiency in total reflection. The capillary is based on an iris-technique, which provides variable forms and size of nominal apertures. This metallic iris capillary exhibits higher mechanical strength than glass tubes, allowing more stable and longer capillary constructions without significant technical expenses.



Innovative aspects and main advantages

- Total reflection critical angle much higher than glass capillary tubes
- Higher mechanical resistance than glass allowing more stable and longer capillary constructions
- 6 to 7 times larger radiation entrance aperture
- Variable apertures in size and shape
- No losses of concentrated radiation
- No heat effects
- Possibility of using micro neutron beams

Areas of application

- X-Ray diffractometry
- X-Ray lithography
- Fabrication of miniature mechanical devices

Stages of development

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MT 1921

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Prototype

Pilot tests performed



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