Title (en)

OPTICALLY DRIVEN THERAPEUTIC RADIATION SOURCE

Title (de)

OPTISCH ANGETRIEBENE THERAPEUTISCHE STRAHLENQUELLE

Title (fr)

SOURCE DE RAYONNEMENT THERAPEUTIQUE A ENTRAINEMENT OPTIQUE

Publication

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Application

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Abstract (en)

[origin: WO02102459A1] A miniaturized, optically driven therapeutic radiation source (100) includes a laser-heated thermionic cathode (122). A fiber optic cable (113) directs a light beam from an optical source (104) to impinge upon a surface of the thermionic cathode (122), heating the surface to a temperature sufficient to cause thermionic emission of electrons. The target element (128) emits therapeutic radiation, such as x-rays, in response to incident accelerated electrons from the electron beam. In one embodiment, the electron source (122) and the target element (128) are disposed within a capsule (130) which defines a substantially evacuated region. The inner surface of the capsule is coated with a semiconductor coating, so that a uniform voltage gradient is maintained within the evacuated capsule. In another embodiment, the thermionic cathode (300) is formed of a spiral-shaped conductive element (310) having a plurality of spaced-apart turns. Interstitial spacing between adjacent turns essentially eliminates heat transfer across the spacin.

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A61N 5/10

IPC 8 full level

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