

HIGH RESOLUTION AND HIGH LUMINANCE
SCINTILLATOR AND RADIATION IMAGER
EMPLOYING THE SAME

ABSTRACT OF THE DISCLOSURE

A fiber optic scintillator includes (18, 118), for example, a plurality of relatively low-density glass scintillating elements (20, 120) for converting radiation into light and a plurality of relatively high-density glass radiation absorbing elements interspersed among the plurality of scintillating elements (20, 120). The high-density glass radiation absorbing elements (40, 140) increase the x-ray stopping power of the scintillator and also produce electron showers which interact desirably in adjacent scintillating elements (20, 120) to increase the luminance of the scintillator (18, 118). The high-density glass radiation absorbing elements also absorb x-ray cross-talk from absorption of radiation in the scintillating elements (20, 120) and desirably include optical absorbers for absorbing optical cross-talk, both of which improves the resolution of the scintillator (18, 118). The plurality of scintillating elements (20) and high-density glass radiation absorbing elements (40) typically are fibers, and the high-density glass radiation absorbing elements (140) may define cladding around the scintillating low-density glass fibers (120).

Figure 1.