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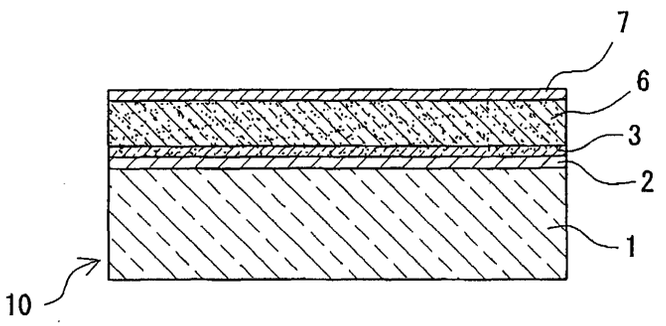
(54) Field emission-type electron source

(57) A lower electrode (2) and surface electrode (7) composed of a layer-structured conductive carbide layer is formed on one principal surface side of the substrate (1) composed of an insulative substrate such as a glass or ceramic substrate. A non-doped polycrystalline silicon layer (3) is formed on the lower electrode (2). An electron transit layer (6) composed of an oxidized porous polycrystalline silicon is formed on the polycrystalline silicon layer (3). The electron transit layer (6) is composed of a composite nanocrystal layer including polycrystalline silicon and many nanocrystalline silicons residing adjacent to a grain boundary of the polycrystalline silicon. When voltage is applied between the lower electrode (2) and the surface electrode (7) such that the surface electrode (7) has a higher potential, electrons are injected from the lower electrode (2) toward the surface electrode (7), and emitted through the surface electrode (7) through the electron transit layer (6).

Fig. 1



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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
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