

ABSTRACT OF THE DISCLOSURE

FIELD EMISSION-TYPE ELECTRON SOURCE AND MANUFACTURING
METHOD THEREOF

An electron source (10) is provided with an n-type silicon substrate (1) as a conductive substrate, a drift
5 layer (6) composed of oxidized porous polycrystalline silicon which is formed on the main surface of the silicon substrate (1), and a surface electrode (7) as a conductive thin film formed on the drift layer (6). The process for forming the surface electrode (7) includes the steps of
10 forming a first layer composed of Cr on the drift layer (6), forming a second layer composed of Au on the first layer, and alloying the two layers. The surface electrode (7) has higher adhesion for the drift layer 6 and/or stability for the lapse of time. In addition, the surface electrode (7)
15 has lower density of states in an energy region near energy of emitted electrons, in comparison with the simple substance of Cr. In the surface electrode (7), scattering of the electrons is less so that electron emitting efficiency is higher.

Fig. 1