INFLUENCE OF SCANDIUM ON THE EMISSIVE PROPERTIES OF SILICON AUTOEMITTERS

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S u m m a r y

We study the influence of scandium Sc on the emissive properties of the matrix of silicon Si autoemitters in superhigh vacuum. It is shown that the presence of Sc affects significantly the absolute value of the emission current and its stability in time. Moreover, this influence can be positive or negative depending on the amount of Sc on the surface. The results of experimental studies testify to the existence of an optimum of the amount of Sc on the specimen surface under study which is characterized by a maximum emissive ability and a high stability of the emission current. The growth of the emissive ability of Si autoemitters in the presence of Sc is explained by the creation of a complex chemical compound on their surface, which favors a decrease in the total work function of a specimen.