

## **Electrical field amplification in electron field emitters on the basis of carbon nanotubes**

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### Summary

The problem of evaluation of the electrical field amplification factor in electron field emitters on the basis of carbon nanotubes (CNT) has been analyzed. There has been stated and resolved the electrostatic problem for determination of the electrical field amplification factor for CNTs with different tip structure, depending on the tilting angle of a CNT relating to the cathode plane and the inter-electrode spacing. There has been calculated the dependence of the electrical field amplification factor for an array of vertically aligned CNT on the spacing between the nanotubes. This dependence has been used for evaluation of the optimum surface density of CNTs in the array, providing the maximum magnitude of the emission current density. The current-voltage characteristic of a CNT-based cathode with taking account the statistical spread in the tilting angle has been calculated. This characteristic is compared with that obtained earlier with taking account the statistical spread of geometrical parameters of CNTs.