Physical and chemical processes of coniferous tree ignition by ground lightning discharge research

© Geniy V. Kuznetsov,* and Nikolay V. Baranovskiy+
Department of atomic and thermal power stations. Tomsk polytechnical university.
Lenin St., 30. Tomsk, 634050. Russia. Phone: +7 (903) 953-56-95. E-mail: firedanger@narod.ru

*Supervising author; +Corresponding author

Keywords: ignition, pine, ground lightning discharge, chemical reaction.

Abstract

The present paper is devoted to simulation of coniferous tree gas-phase ignition by ground lightning discharge. Pine tree is under consideration. Oxidation of carbon monoxide by oxygen is the main chemical reaction. The problem is solved in one-dimensional statement in cylindrical system of coordinates. Parametric investigation of volt-ampere characteristics influence on stem ignition process has been carried out for negative and positive ground lightning discharges. Times of ignition delay in a typical range of influence parameters change have been established.