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Effect of gamma irradiation on conductivity of $\text{Cd}_{1-x}\text{Fe}_x\text{Te}$

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The effect of γ -irradiation at the dose $D_\gamma = 605.6$ kGy on the temperature dependences of conductivity and dielectric permittivity of $\text{Cd}_{1-x}\text{Fe}_x\text{Te}$ semimagnetic semiconductors were investigated. The character of the $\varepsilon'(T)$ dependences of the irradiated $\text{Cd}_{1-x}\text{Fe}_x\text{Te}$ changes: there is a drop in the curves in the temperature range of $300 \div 400$ K at measurement frequencies 25 Hz-1 MHz, and ε' increases by 20 times. In the $\sigma(T)$ dependence, at all measurement frequencies a maximum appears at a temperature of 400 K and conductivity increases by 40 times. We assume that the character of the temperature dependences of dielectric permittivity and conductivity corresponds to the ionic conductivity.

Keywords: Semimagnetic semiconductors, dielectric permittivity, conductivity, measurement frequencies, γ -irradiation