**Laser radiation power sensor with adjustable dynamic range based on the copper-coated silica optical fiber**

Biography.

Ivan is currently a student in Moscow Institute of Physics and Technology, Moscow, Russia. He has received a bachelor degree in photonics in 2017. Field of interest: fiber optics, fiber sensors.

Abstract.

In present work we propose a novel method for fiber laser radiation power measurement using a metal-coated fiber as a sensor. High intensity laser radiation transmitting through this fiber is partially scattered and therefore absorbed by outer layers of the fiber. This leads to fiber heating and, consequently, to a change in the electrical resistance of the metal coating which is measured by an ohmmeter.

Linear dependence of fiber coating temperature on transmitted laser radiation power was experimentally observed. Sensibility of the sensor was increased by more than two orders of magnitude by applying fiber bending due to bend losses of higher-order modes. The numerical modeling of fiber heating was performed and radiation scattering coefficients were calculated. The described method can be used for real-time high-power laser radiation measurements due to low power losses and beam quality maintenance.