

The knowledge gained in the result of project will improve our understanding of the behaviour and properties of optical materials in the nanoscale. Planned studies are expected to yield a plethora of new data related to the interactions of light with nanomaterials. The first aim of the project is to develop method of synthesis and nanosized so-called persistent phosphors, i.e. special type of optical nanomaterials exhibiting emission of light after the removal of the excitation source. Because red persistence intensity and its period are still not sufficient compared with green and blue ones, particular attention of the research will be devoted to the red emitting phosphors, as well to infrared emitting phosphors used for biomedical imaging. In addition, red persistence can create a white display by its combination with green and blue components. Therefore, the importance of results of the project on the civilization and society will be enormous: the luminescence nanomaterials can now be found not only in lighting but also from nanoprobes in medical diagnostics, temperature sensing, to security printing in bonds and bank notes.