

The project concerns the analysis of optically active properties of thin-film coatings with a gasochromic effect. This type of coating is already used in the construction of the so-called intelligent windows, in which there is a possibility of predictable and repeatable control of the amount of transmitted or reflected light using a specific gaseous medium (e.g. hydrogen) or steam (e.g. selected organic compounds). Another example of the use of such thin films is the possibility of using the gasochromic effect to construct an optical sensor of selected gases. Such sensors could be used in the future wherever the supply of electrical signals is difficult or could cause, for example, a hazard in the event of explosive gas mixtures. The basis for designing such intelligent devices is the knowledge of the course and changes in the characteristics of the complex refractive index under the influence of a specific atmosphere. However, at present, in the current state of knowledge, there is no model that would allow explaining the mechanisms of changing optical properties and linking the changes in optical properties observed in gasochromic materials with the process of interaction of selected gases (or vapor). Therefore, the aim of the project is to conduct a comprehensive analysis that will be used to develop an analytical model for the design of such intelligent optically active coatings.