# Analysis of the impact of the selected geometric parameters and thermophysical properties of liquid solar collectors on their thermal and flow parameters.

*Abstract:*

The thesis is related to the field of photothermal solar energy conversion. The thesis consists of three main parts. The first one is focused on elaboration of the solar collector numerical models, which can be used to calculate the thermal efficiency of solar collector, taking into account the solar collector design parameters. The second part presents the results of experimental work, which was carried out in order to verify chosen methods of solar collector numerical simulations. Then, the validated numerical models were used to perform the main part of the research, which was the impact of modifications of main geometric and thermophysical properties on the characteristics of thermal efficiency of solar collectors.

In this work a number of issues often encountered in modern solar water heating systems are discussed. Due to the wide scope of research activity, the obtained results have a very applicational character. The main conclusion concerns the abilities to form the solar collector efficiency curve by changing its main design parameters.

The performed analysis that is presented in this work, allowed to detect the specific design configuration of solar collectors, for which the high thermal efficiency can be achieved in a wide range of thermal efficiency characteristics. Also, the low cost design configuration, with satisfying thermal efficiency, was found.