The requirement for accurate and fast temperature readout is important from the perspective of many applications both technical and everyday life. The ability to read the temperature remotely using luminescent thermometry technology facilitates and in many cases even makes possible to read the temperature without having to provide contact between the object and the reading system. The thermometric properties of a luminescent thermometer such as its sensitivity, readout precision and operating temperature range depend on a great many structural factors of the material used. A full understanding of the correlation between these parameters and thermometric properties will enable the design and development of thermometers with predetermined properties dictated by the requirements of a given application. It should be emphasized that at each stage of theoretical work, the findings and research hypotheses will be verified by time-synchronized synthesis of phosphorus and relevant measurement results. Such research methodology will allow not only for the correct selection of computational techniques, but also for obtaining and thoroughly testing effective phosphorus for applications in remote thermometry. Therefore, the goal of this project is to understand and describe these correlations and then create a library of phosphors with predefined thermometric properties. The end result of the project will be the development of a strategy for creating luminescent thermometers based on the excited level lifetimes of Mn^{4+} ions with parameters determined according to user demand.