

In this bachelor thesis we will study the determination of absolute quantum yields (efficiency) of photoluminescence, which is equal to the ratio of number of emitted photons and number of absorbed photons. The common approach is to compare the absorption and luminescence spectrum. The main experimental problem is to eliminate the influence of angular dependence of reflection, emission and scattering. Therefore it is convenient to use the integrating sphere which eliminate most of the problems of relative measurements of quantum yield. In detail we will describe the method to determine the quantum yields of luminescence using the integrating sphere including the description of the experimental equipment and the procedure of processing data and estimation of uncertainty. Finally, we apply the procedure to solid and liquid samples containing silicon nanocrystals. We will measure the dependence of quantum yields on the applied excitation wavelength.