This thesis describes the measurement of the crystal samples of lead tungstate scintillators. New detectors in high energy physics will need high-quality electromagnetic calorimeters. Crytur company in collaboration with researchers from Faculty of Mathematics and Physics develop a method to test optical properties of crystals exposed to radiation. More than one hundred samples were already irradiated and measured to render valuable results. Issues with a spectrometer time stability were revealed and addressed. The significance of temperature influence on radiation induced absorption coefficient is still not fully resolved and is open to further investigation. Correlation between data from Prague and Germany shows that sample measurement is an adequate method to decide crystal quality.