If beer is exposed to light radiation, it very quickly creates an undesirable unpleasant so-called lightstruck flavor. According to current ideas, 3-methyl-2-butene-1-thiol (MBT) is responsible for the lightstruck flavour in beer. The formation of MBT is associated with non-enzymatic reactions in which isohumulones and sulfuric components of amino acids and their derivatives emerge. Riboflavin (vitamin B2), which absorbs light and reacts with isohumulones in the excited state, acts as a photocatalyst. Light degrades riboflavin into its photoproducts.

The aim of this work was to verify the possibilities of optical detection of beer photodegradation. An apparatus for detecting spectrally differentiated fluorescence intensity with a replaceable excitation LED source was constructed. The apparatus allows the excitation emission matrix of fluorescence (EEM) to be measured with selected excitation wavelengths. The fluorescence signal is scanned by a spectrophotometer with 90 ° offset to the excitation beam and corrected by its intensity which was detected in a straight line. The light source and detectors are connected to the measuring chamber via optical fibers.

The fluorescence spectra of riboflavin, its photoproduct lumichrome and samples of fresh and defined light-damaged beer were measured on the apparatus. The results confirmed that the assembled apparatus makes it possible to detect optical changes of beer associated with its light damage.