

Effect of single layers in fluorescence lifetime imaging ophthalmoscopy (FLIO)

Dietrich Schweitzer¹, Matthias Klemm²,

¹Clinic of Ophthalmology, FSU Jena

²Institute of Biomedical Technique and Informatics, TU Ilmenau

Despite FLIO develops as a new diagnostic tool in ophthalmology, its potential is not fully utilized. The detectable signal is the sum of fluorescence of several layers of the eye. Much better diagnostic conclusions could be drawn, if the fluorescence of anatomical structures is separately detectable. It will be shown that the fluorescence of the anterior part of the eye covers the fundus fluorescence, despite its confocal detection. Proposals will be presented, which separate or eliminate the fluorescence of the crystalline lens. Comparing intersections in OCT and Lifetime images, a certain correspondence can be found between anatomical fundus structure and components of 3-exponential fit of the fluorescence. To avoid damages, the separation of the fluorescence of fundus layers, the application of fs-Laser pulses is not allowed. A simple solution for the simultaneous detection of the fluorescence of fundus layers is a sloped excitation of the fundus. At the end, the impact of fundus layers in genetically mutated mice will be discussed.