**The effect of inorganic precipitates formation on hydration and structural properties of calcified hydrogel-based intraocular lens material**

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The goal of presented study was to examine the effect of inorganic precipitates formation during implantation on matter transport and structural changes in hydrogel-based intraocular lens (IOL) material. The IOL made primarily from 2-hydroxyethyl methacrylate (2-HEMA) was explanted from the human eye after six years of application. Morphological and elemental analysis revealed the formation of grains with size of at least 100 nm in diameter consisting of inorganic elements with dominant presence of calcium and phosphorous. Hydration, spectral and structural properties were investigated during the dehydration of explanted IOL and compared with those obtained for the brand new reference material. Conducted study indicated the effect of precipitates on hydration and water structure in calcified material. Moreover, deposits affected polymeric chains motion as it was revealed in the free volume evolution study. Results obtained in the study were linked with possible supersaturation of aqueous humor by inorganic ions caused by application of anti-glaucoma medication.