# STRAIN EVOLUTION IN POROUS BIOLOGICAL TISSUES AND PHANTOMS DURING OPTICAL CLEARING

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Evolution of strain during the diffusion of optical clearing agents (OCAs) in hydrated porous media, such as biological tissues and polyacrylamide tissue phantoms, is studied by the means of non-contact Optical Coherence Elastography (OCE). The general regularities of the dynamics of near-surface deformation in the non-equilibrium regime are discussed. The work compares the effect of various clearing agents, electrolyte solutions and their concentrations on the rate of clearing and deformation. The range of the observed strain varied from $\pm 10^{-4}$ to $\pm 0.4$ during the first ten minutes of the diffusion. For concentrated electrolyte solution the sign-changing nature of the subsurface strain is shown depending on the initial concentration inside the tissue and solution. The OCE-technique enables to reveal previously inaccessible details of the complex spatio-temporal evolution of the osmotically-induced strains with the spatial resolution of tens of micrometers [1].

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References

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