Microscopy and laser light scattering are both powerful techniques to determine the structural and the dynamical properties in soft-condensed matter. Standard dynamic light scattering (DLS) techniques have much better statistics than microscopic techniques but miss the spatial resolution. We combined both techniques to make space-resolved laser light scattering possible [1]. We used a standard DLS experiment and installed a special optical detection setup to image the scattered light onto a fast CCD camera. The optical setup works like a microscope and provides the spatial resolution, because it links the position on the CCD camera to its origin scattering volume in the sample. Therefore the dynamics at different sample positions can be determined simultaneously with high statistics.

An interesting application of this setup is to determine the dynamics in a metastable colloidal fluid, which exhibits spatial heterogeneous dynamics [2]. The dynamics can be understood as an accumulation of mobile and immobile particles. Recent computer simulations suggested that the local structure and the local dynamics of the metastable melt are correlated to each other [3].