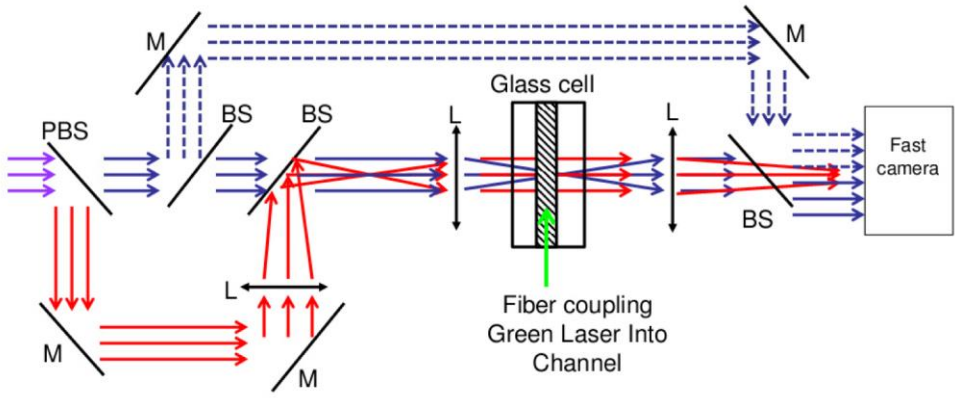

Fig. 5. Schematic of the interferometric setup (not to scale, arrows illustrate ray trajectories but are not precise ray traces). A NIR beam (purple arrows) is split into two orthogonal polarizations. One polarization (red arrows) facilitates direct imaging (shadowgraphy) of the dynamics in the channel. The other polarization is also split into two: one part (blue whole arrows) is focused into the fluid channel, where it is used as a probe of nanoparticle concentration changes, as a shockfront crosses its path. This beam is subsequently collimated, and is interfered with a reference beam of the same polarization (blue dashed arrows) on the sensor of a fast camera (~200fps). The resulting interference signal is recorded in real time simultaneously with the imaged dynamics, and analyzed offline. The shock-front is generated in the channel using green CW laser light which is coupled to the channel through the fiber. In the drawing: L = Lens, M = Mirror, BS = beam splitter, PBS = Polarizing beam splitter.

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