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Laser induced mechanical effects in biomaterials

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Mechanical effects induced by lasers with nanoseconds to hundreds of microseconds pulse duration on biomaterials are discussed. Strong shock waves are generally observed during laser irradiation due to very rapid heating and phase change in the interaction zone. Moreover even stronger shock waves can be generated some hundreds of microseconds later in response to the collapse of the induced cavitation bubble in confined environment. The impact of the laser induced cavitation processes on the observed damage on selected biotargets (bone, cartilage and urinary stones) will be discussed. The effect of the laser pulse characteristics on both acoustical transients will be discussed as well.