



Institute of Physics of the
Czech Academy of Sciences

SEMINAR

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Perla Seminar Room
HiLASE Centre, FZU, Dolní Břežany

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Copper niobate

A newly identified optical limiter

After the invention of laser in 1960, the laser technology had bloomed quick as a wink in the field of nonlinear optics (NLO), medicine, industries, communication, defence and material processing. Among the various lasers available, ultrashort pulse (femtosecond) lasers with high repetition rate (megahertz) have received significant impact in recent years because of its wide operating wavelength range. With tremendous increase in usage of ultrashort pulse lasers, the risk of damaging the sensors is very high since these lasers release an enormous amount of energy at short duration of time. In the search of laser safety devices, significant research effort is made on investigating passive-optical limiting materials that relies on nonlinear optical properties to achieve protection from laser damages. Optical limiters are the materials which block the transmittance of high-intensity light and allow the low-intensity light to pass through. Thus, understanding the third-order nonlinearity of the material is seriously made to study the ultrashort pulse optical limiting behaviour of the material in IR regime. It is interesting to be noted that, semiconductor made with proper choice of metals can yield efficient materials with high stability, large nonlinear response, high laser damage threshold, high thermal and chemical stability and thus can be used for ultrashort pulse optical limiting. This work discuss on the fabrication of copper niobate as a thin film by pulsed laser deposition for possible use in the optical limiting application.

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