

## Investigation of hot dense plasmas heated by short-pulse intense laser using x-ray spectroscopy

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Hot dense conditions in titanium (Ti) targets irradiated with intense subpicosecond laser pulses on PHELIX laser facility are investigated using x-ray spectroscopy. The effects of microstructured targets on laser absorption and conversion efficiency are studied through the  $K\alpha$  emission. The results are benchmarked by flat titanium foils. Two identical HOPG crystal spectrometers are utilized to observe the  $K\alpha$  emission from both front and rear sides of Ti targets. The effective temperature and density of hot dense plasmas are evaluated by analysing the x-ray spectroscopic data in combination with spectral modelling by FLYCHK and ATOMIC codes. PIC simulation is also implemented to study the evolutionary process of the laser-target interaction, providing time-dependent temperature and density information, which are used as an input of the spectral simulations.