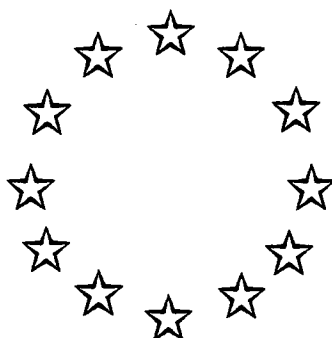


**INTERNATIONAL RESEARCH WORKSHOP
(EUROCONFERENCE)**



**GENERATION AND APPLICATION OF
ULTRASHORT X-RAY PULSES - II -**

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**Experimental investigation of X-ray production and transport
in laser-produced plasmas using K-shell spectroscopy**

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K-shell emission from Aluminum plasmas produced by Nd nanosecond laser pulses was studied. Histories of line emission and electron temperature were deduced from time-resolved spectra and studied as a function of target position along the laser beam propagation axis and laser pulse duration. Both the X-ray conversion efficiency and plasma temperature were found to have a maximum in a target position displaced from the focused beam waist in the direction of propagation of the laser beam, the displacement being larger for pulses with longer duration and lower intensity. Those results suggested that X-ray production was influenced by filamentation of laser light in the plasma. This point is presently under further investigation. Spectra of the rear face emission from laser-irradiated Al foils showed that the X-ray opacity of the dense region of the target is reduced in this spectral region. This opacity reduction was probably due to ionization caused by radiative energy transport in the target.