Heavy ions and X/γ ray diagnostics used in PW laser-plasma experiments

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The availability of multi-peta-watt lasers offers new opportunities to study the laser-plasma physics at intensity over 10^22 W/cm^2. It's widely predicted that energetic ions and bright X/ γ rays will be generated when proper targets are shot. In the last year, we performed 2 experimental campaigns using the 4 PW laser of CoReLS in Korea. Enabled by a double plasma mirror system, multi-type ultrathin foils (<100 nm) and composite nano-targets were irradiated at intensity over 10^21 W/cm^2. Generation of Energetic heavy ions and bright X/ γ rays were observed. Here we will report the the experimental results and the methods we used to diagnose the heavy ions and the X/ γ rays. The problems we met in the experiments will be discussed as well.