Influence of the Electrode Material and Structure on the Performance of a XeCl* Laser

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***Abstract*—The XeCl* excimer laser is a well-established system tool for many applications. During operation, highly volatile chlorides are often formed, which leads to enhanced electrode erosion and reduced lifetime. Therefore, special attention should be paid to the rate of erosion of all electrode materials that are used in chlorine based excimer lasers. In our work, we came to the result that the chemical behavior of the electrode material is much more important than the classical electrode parameters erosion rate and work function. To separate the erosion rate into a chemical and physical part, we used a nickel electrode as anode (almost no wear) and cathode (low wear compared to tungsten). We concluded that nickel as an electrode material is still the best material in our laser design.**

***Index Terms*—Chlorine compounds, electrode materials, vapor pressure, XeCl*.**

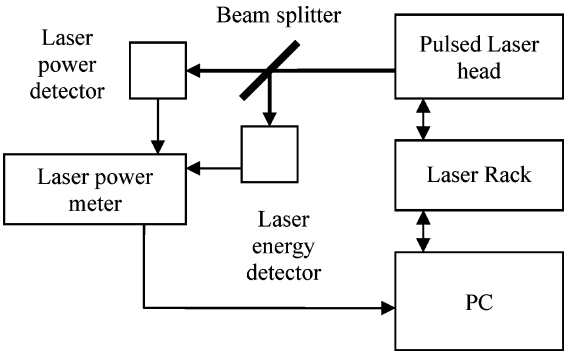

Fig. 1. Experimental setup. The energy and the power of the laser are computed simultaneously.