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**Melnychuk et al.**

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(54) **EXTREME ULTRAVIOLET LIGHT SOURCE**

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**Related U.S. Application Data**

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(51) **Int. Cl.**<sup>7</sup> ..... **H01J 35/20**

(52) **U.S. Cl.** ..... **250/504 R**; 250/493.1; 378/119

(58) **Field of Search** ..... 250/504 R, 493.1; 378/119; 372/5, 87

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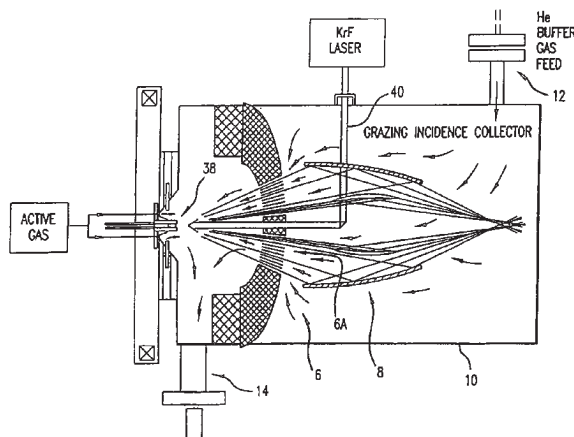
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(57) **ABSTRACT**

The present invention provides a reliable, high-repetition rate, production line compatible high energy photon source. A very hot plasma containing an active material is produced in vacuum chamber. The active material is an atomic element having an emission line within a desired extreme ultraviolet (EUV) range. A pulse power source comprising a charging capacitor and a magnetic compression circuit comprising a pulse transformer, provides electrical pulses having sufficient energy and electrical potential sufficient to produce the EUV light at an intermediate focus at rates in excess of 5 Watts. In preferred embodiments designed by Applicants in-band, EUV light energy at the intermediate focus is 45 Watts extendable to 105.8 Watts.

**78 Claims, 50 Drawing Sheets**



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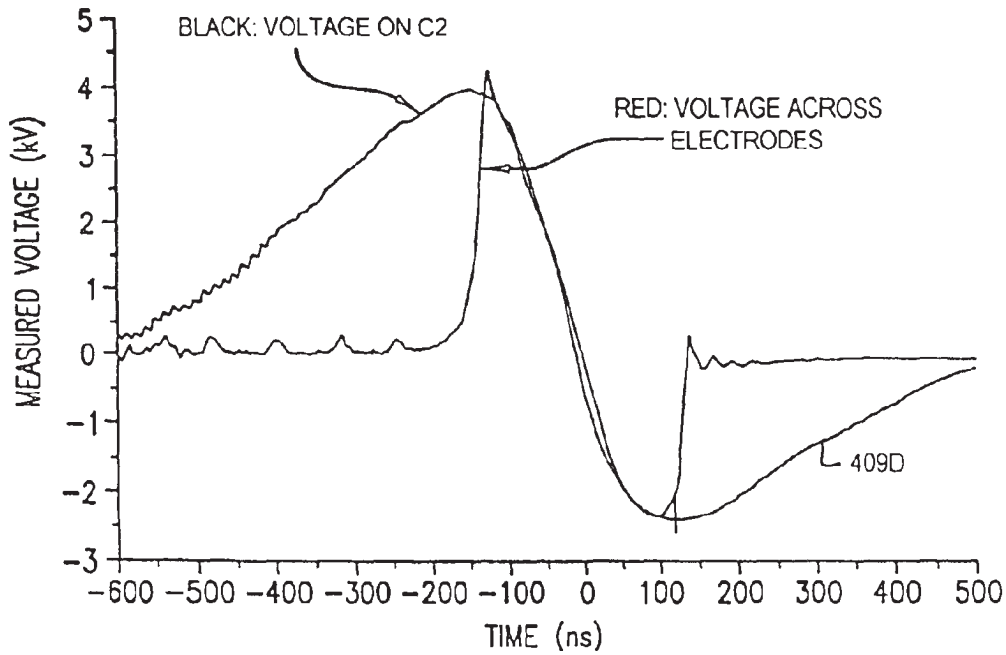


FIG. 1B

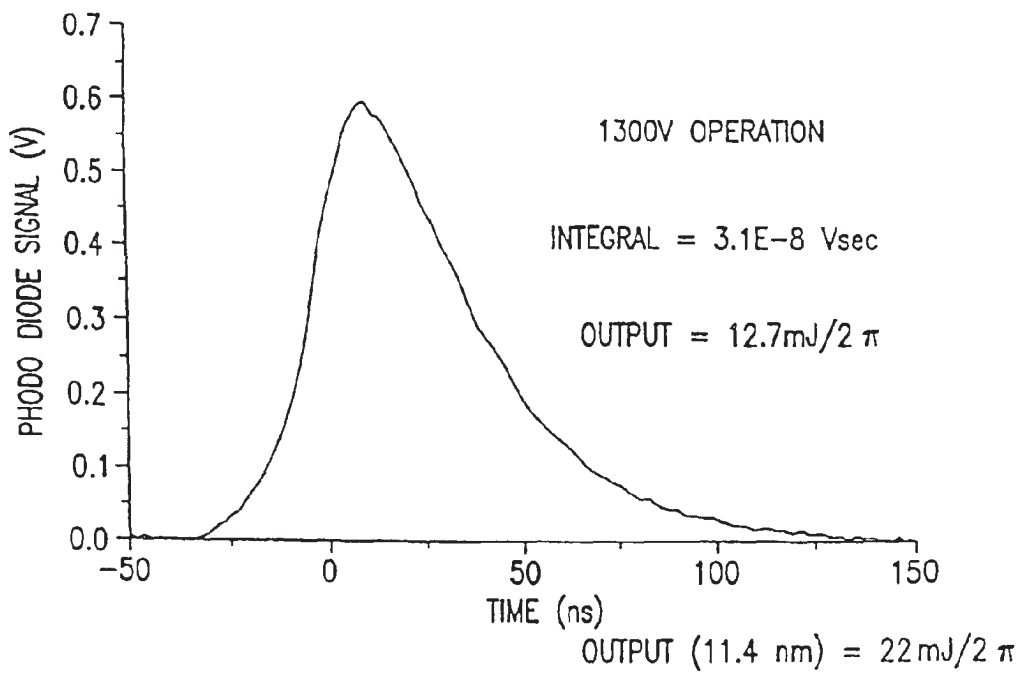


FIG. 1C

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