



(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0068012 A1**

Ahmad et al.

(43) **Pub. Date:**

Apr. 10, 2003

(54) **ARRANGEMENT FOR GENERATING EXTREME ULTRAVIOLET (EUV) RADIATION BASED ON A GAS DISCHARGE**

(57)

ABSTRACT

(75) Inventors: **Imtiaz Ahmad**, Goettingen (DE);
Guido Schriever, Goettingen (DE);
Juergen Kleinschmidt, Weissenfels (DE)

The invention is directed to a method and an arrangement for generating extreme ultraviolet (EUV) radiation, i.e., radiation of high-energy photons in the wavelength range from 11 to 14 nm, based on a gas discharge. The object of the invention, to find a novel possibility for generating EUV radiation in which an extended life of the system is achieved with stable generation of a dense, hot plasma column, is met according to the invention in that a preionization discharge is ignited between two parallel disk-shaped flat electrodes prior to the main discharge by a surface discharge along the superficies surface of a cylindrical insulator with a plasma column generated through the gas discharge with pulsed direct voltage, which preionization discharge carries out an ionization of the working gas in the discharge chamber by means of fast charged particles. The preionization discharge is triggered within a first electrode housing and the main discharge takes place between a narrowed output of the first electrode housing and a part of the second electrode housing close to the outlet opening of the discharge chamber. The plasma develops in a part of the second electrode housing covered by a tubular insulator and, as a result of the current-induced magnetic field, contracts to form a dense, hot plasma column, one end of which is located in the vicinity of the outlet opening of the second electrode housing.

Correspondence Address:
Gerald H. Kiel, Esq.
REED SMITH LLP
599 Lexington Avenue
New York, NY 10022-7650 (US)

(73) Assignee: **XTREME technologies GmbH;**

(21) Appl. No.: **10/267,373**

(22) Filed: **Oct. 9, 2002**

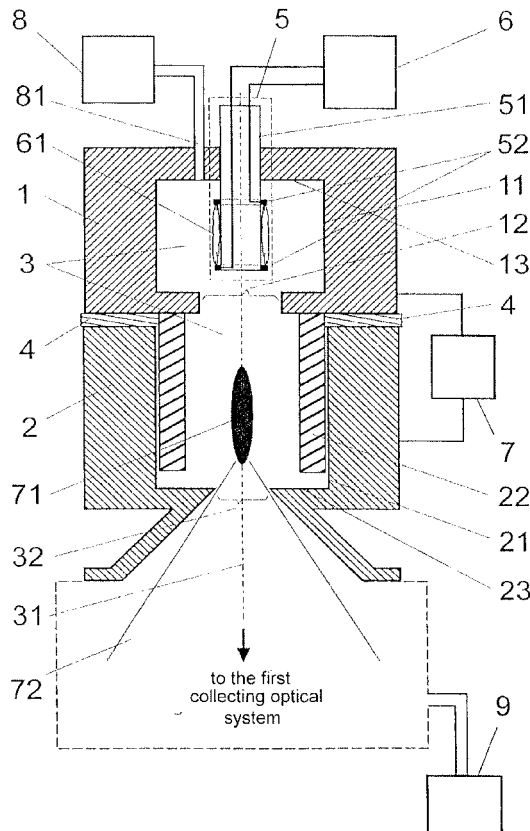
(30) **Foreign Application Priority Data**

Oct. 10, 2001 (DE)..... 101 51 080.2

Publication Classification

(51) **Int. Cl.⁷** **H05H 1/00**

(52) **U.S. Cl.** **378/119**



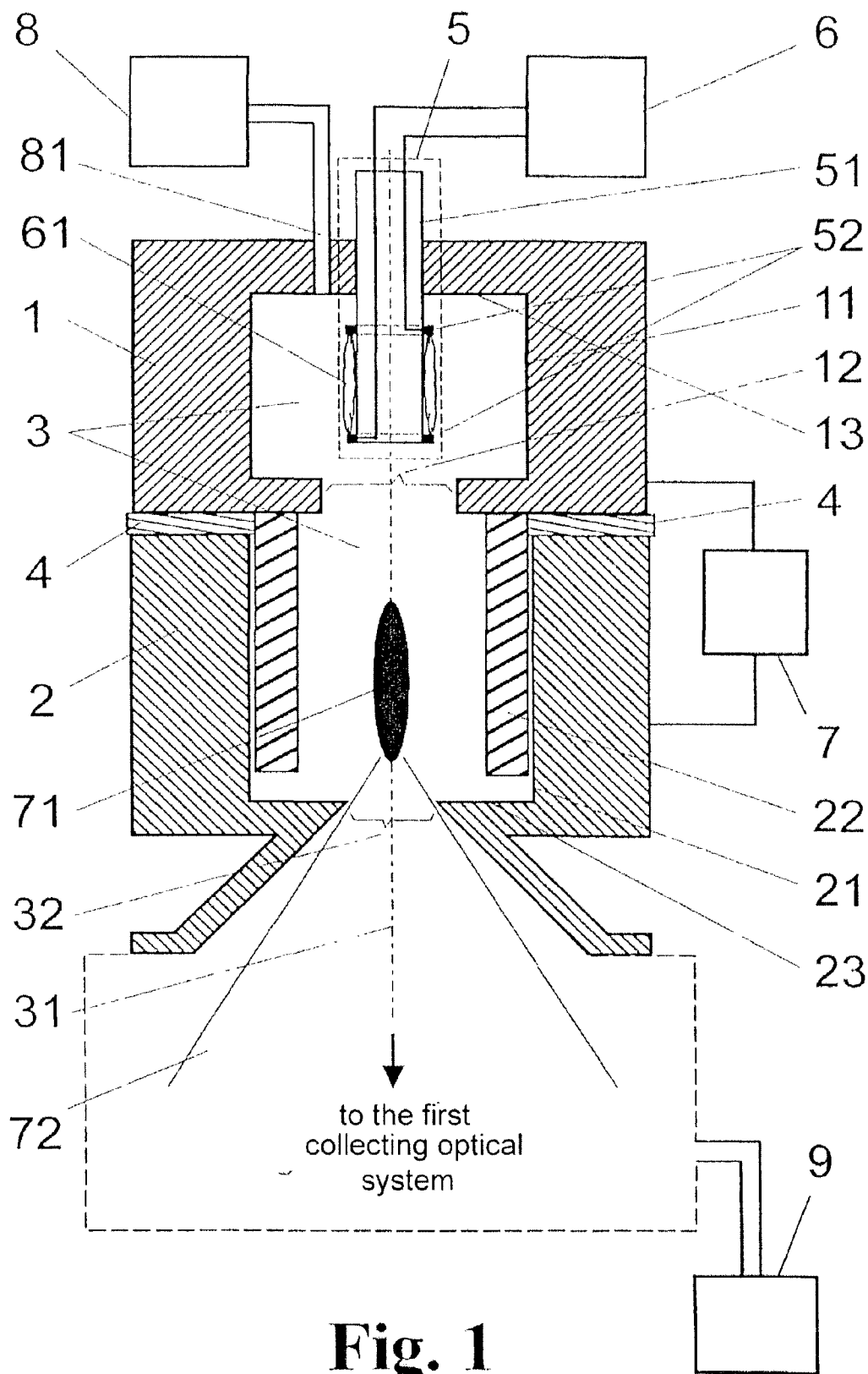


Fig. 1

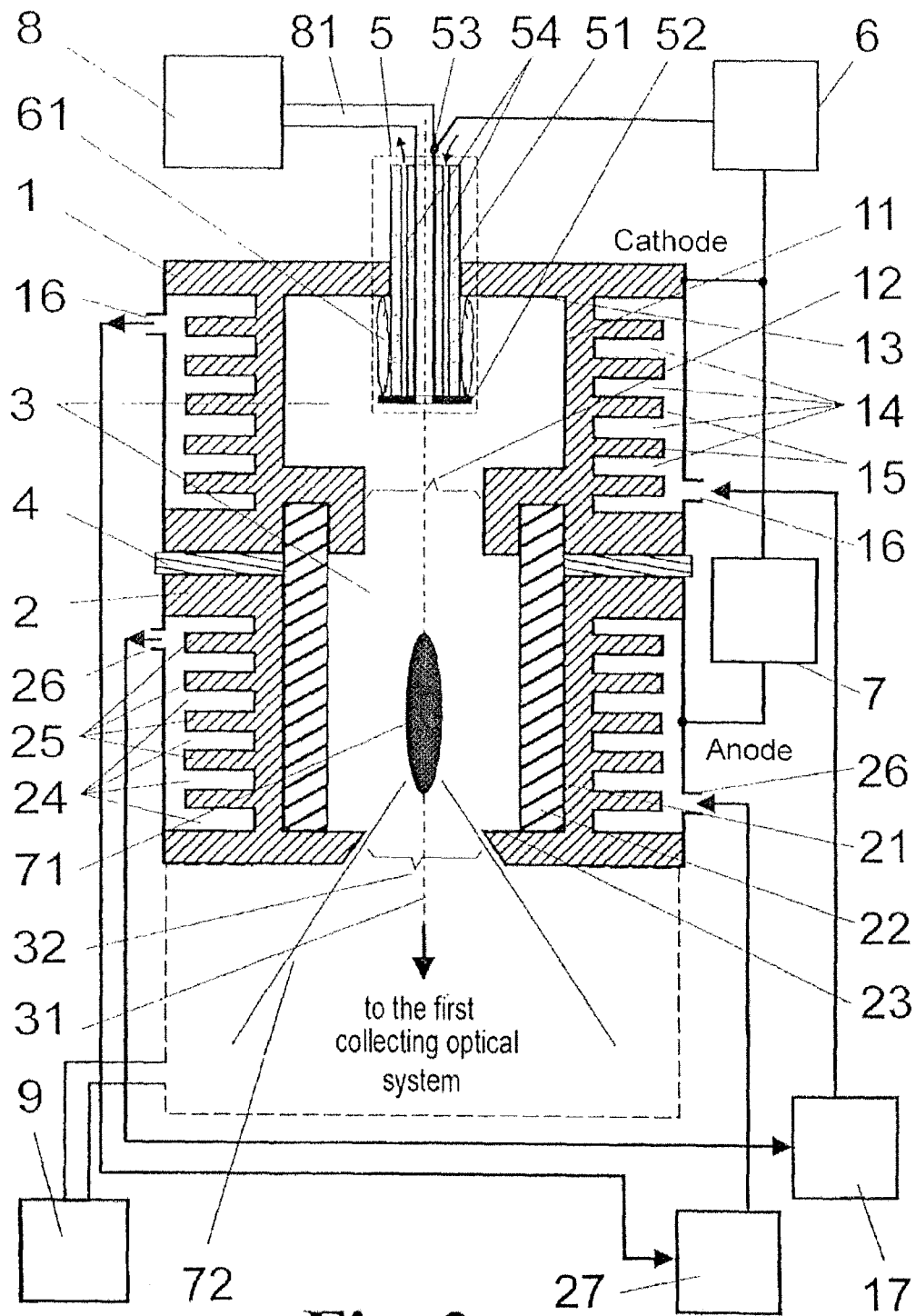


Fig. 2

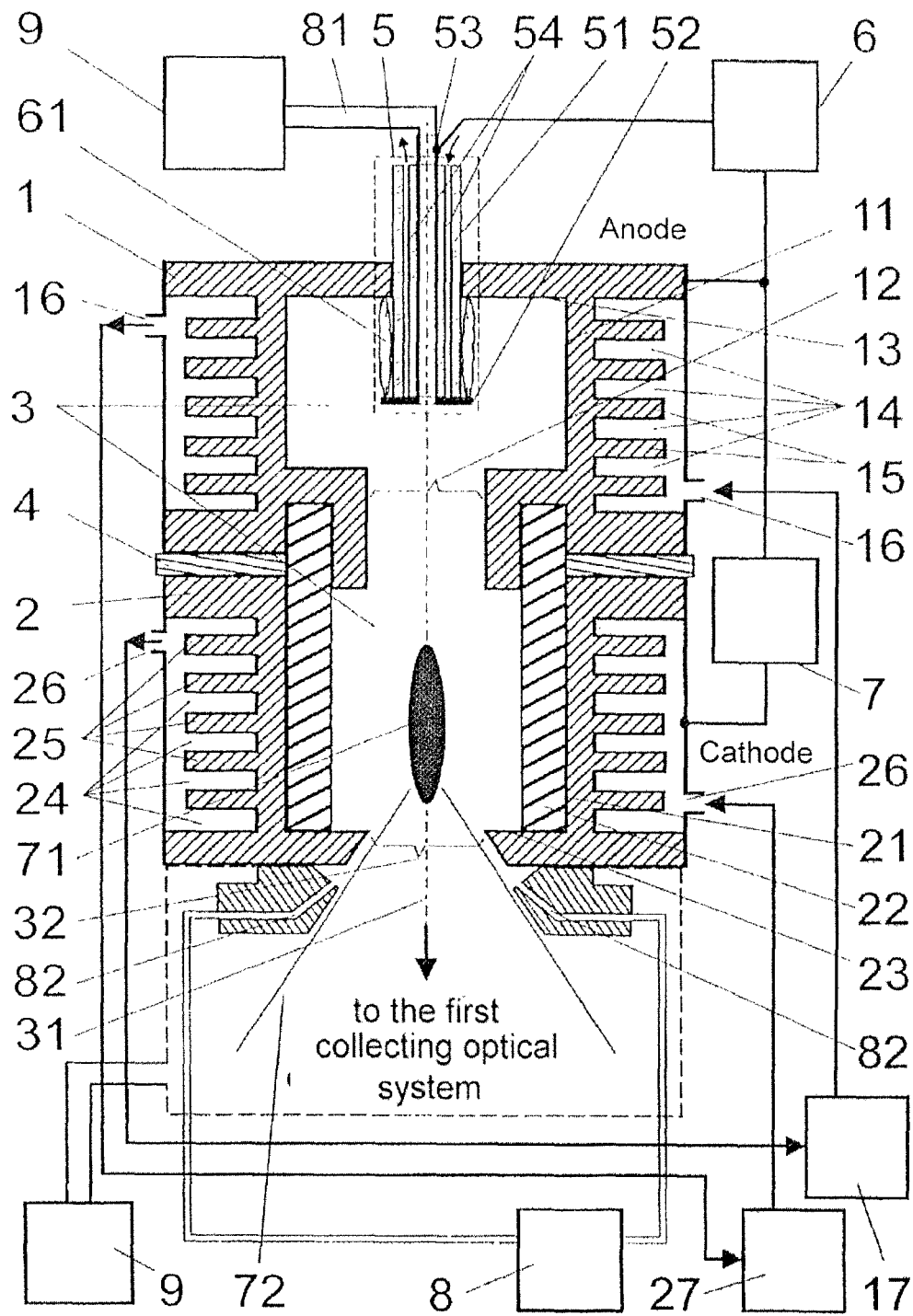


Fig. 3

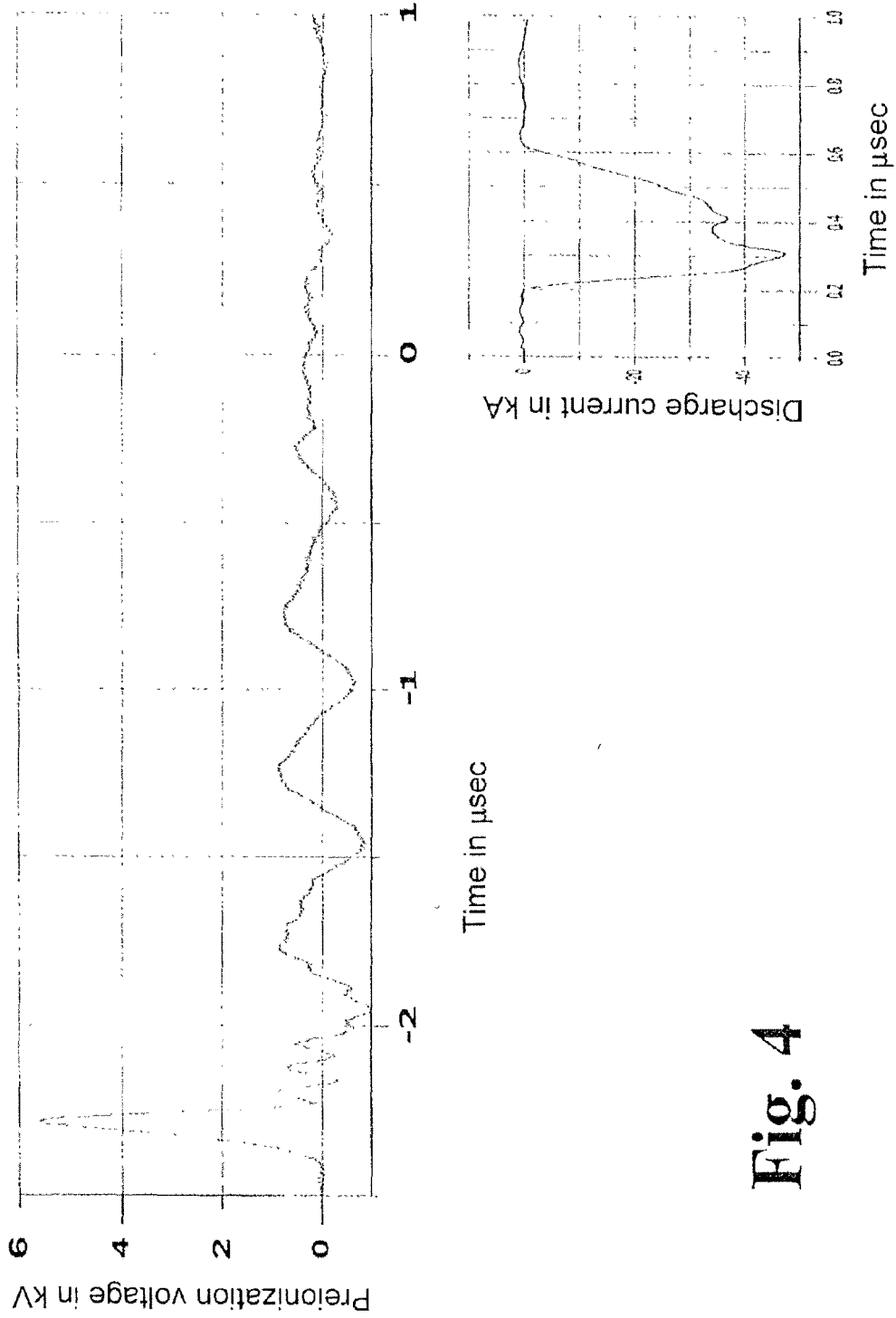


Fig. 4

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.