(12) **United States Patent**
Harrison et al.

(10) **Patent No.: US 6,775,000 B2**
(45) **Date of Patent: Aug. 10, 2004**

(54) **METHOD AND APPARATUS FOR WAFER-LEVEL TESTING OF SEMICONDUCTOR LASER**

(75) Inventors: **James Harrison**, Morgan Hill, CA (US); **David Leslie Heald**, Solvang, CA (US)

(73) Assignee: **Novalux, Inc.**, Sunnyvale, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 397 days.

(21) Appl. No.: **10/033,975**

(22) Filed: **Dec. 19, 2001**

(65) **Prior Publication Data**

US 2003/0164707 A1 Sep. 4, 2003

(51) **Int. Cl.**[7] **G01N 21/00**
(52) **U.S. Cl.** **356/432**; 356/237.5; 324/767
(58) **Field of Search** 356/432–440, 356/237.1–237.5; 324/767, 760, 765; 372/43, 45, 50, 46

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,260,772	A	*	11/1993	Pollak et al.	356/417
5,422,498	A	*	6/1995	Nikawa et al.	257/48
5,498,973	A		3/1996	Cavaliere et al.	324/765
6,057,918	A		5/2000	Geary et al.	356/218
6,137,305	A		10/2000	Freund et al.	324/767
6,255,707	B1		7/2001	Bylsma et al.	257/414
6,264,852	B1		7/2001	Herchen et al.	216/60
6,448,805	B1	*	9/2002	Heald et al.	324/767

* cited by examiner

Primary Examiner—Hoa Q. Pham
(74) *Attorney, Agent, or Firm*—Fay Kaplun & Marcin, LLP

(57) **ABSTRACT**

A system and method for manufacturing and wafer-level testing properties of a wafer comprises a chuck receiving a wafer to be tested and a pump light source directing an output beam toward selected locations on a wafer received on the chuck in combination with a laser light detector detecting light emitted from the wafer and a pump beam aiming mechanism selectively varying a position at which the pump light source output beam enters the wafer.

31 Claims, 3 Drawing Sheets