



US005831153A

# United States Patent [19]

[11] Patent Number: **5,831,153**

**Binnig et al.**

[45] Date of Patent: **Nov. 3, 1998**

[54] **INVESTIGATION AND/OR MANIPULATION DEVICE FOR A SAMPLE IN FLUID**

Drake et al., "Imaging Crystal, Polymers, and Processes in Water with the Atomic Force Microscope", Science, vol. 243, 24 Mar. 1989, pp. 1586-1589.

[75] Inventors: **Gerd Karl Binnig**, Wollerau; **Walter Haerberle**, Waedenswil, both of Sweden

Maivald et al., "Using Force Modulation to Image Surface Elasticities with the Atomic Force Microscope", Nanotechnology, vol. 02, 1991, pp. 103-106.

[73] Assignee: **International Business Machines Corporation**, Armonk, N.Y.

[21] Appl. No.: **801,049**

*Primary Examiner*—Daniel S. Larkin

[22] Filed: **Feb. 14, 1997**

*Attorney, Agent, or Firm*—Whitham, Curtis & Whitham; Casey P. August

[51] **Int. Cl.<sup>6</sup>** ..... **G01B 5/28**

[52] **U.S. Cl.** ..... **73/105**

[58] **Field of Search** ..... 73/105; 250/306

## [57] ABSTRACT

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,935,634	6/1990	Hansma et al.	250/306 X
5,291,775	3/1994	Gamble et al.	73/105
5,294,804	3/1994	Kajimura	250/306 X
5,463,897	11/1995	Prater et al.	73/105

#### OTHER PUBLICATIONS

Baselt et al., "Scanned-Cantilever Atomic Force Microscope", Rev. Sci. Instrum., vol. 64, No. 4, Apr. 1993, pp. 908-911.

An investigation and/or manipulation device for a sample which is located in a container fluid includes an investigation and/or manipulation tool which is mounted at a first of a cantilever and which during investigation and/or manipulation of the sample immerses into the container fluid. The opposite side of the cantilever is at least partly not immersed into the container fluid during investigation.

**20 Claims, 2 Drawing Sheets**

