



US005100627A

United States Patent [19]

[11] Patent Number: **5,100,627**

Buican et al.

[45] Date of Patent: **Mar. 31, 1992**

- [54] **CHAMBER FOR THE OPTICAL MANIPULATION OF MICROSCOPIC PARTICLES**
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- [21] Appl. No.: **443,287**
- [22] Filed: **Nov. 30, 1989**
- [51] Int. Cl.⁵ **G01N 21/00; G01N 31/01; G02B 00/00**
- [52] U.S. Cl. **422/108; 422/58; 422/68.1; 422/82.05; 356/244; 359/350**
- [58] Field of Search **422/58, 82.05, 68.1, 422/108; 435/300, 301; 350/536, 1.1**

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[57] ABSTRACT

A particle control chamber enables experiments to be carried out on biological cells and the like using a laser system to trap and manipulate the particles. A manipulation chamber provides a plurality of inlet and outlet ports for the particles and for fluids used to control or to contact the particles. A central manipulation area is optically accessible by the laser and includes first enlarged volumes for containing a selected number of particles for experimentation. A number of first enlarged volumes are connected by flow channels through second enlarged volumes. The second enlarged volumes act as bubble valves for controlling the interconnections between the first enlarged volumes. Electrode surfaces may be applied above the first enlarged volumes to enable experimentation using the application of electric fields within the first enlarged volumes. A variety of chemical and environmental conditions may be established within individual first enlarged volumes to enable experimental conditions for small scale cellular interactions.

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20 Claims, 4 Drawing Sheets

