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## [54] APPLICATION OF MICROSUBSTRATES FOR MATERIALS PROCESSING

[75] Inventors: **Richard Cavicchi**, Washington Grove; **Stephen Semancik**, Mt. Airy; **John S. Suehle**, Westminster; **Michael Gaitan**, Gaithersburg, all of Md.

[73] Assignee: **The United States of America as represented by the Secretary of Commerce**, Washington, D.C.

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[58] Field of Search ..... **427/96, 126.3, 10, 255, 427/282, 376.2, 8; 204/192.12; 430/315**

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*Primary Examiner*—Shrive Beck  
*Assistant Examiner*—Vi Duong Dang  
*Attorney, Agent, or Firm*—Michael S. Gzybowski

### [57] ABSTRACT

Arrays of microfabricated hotplates have been used as substrate arrays for materials processing on a microscopic scale. Properties of individual elements (pixels) of the array, such as temperature and voltage bias, are controlled by addressing a given pixel with appropriate signals. Materials are deposited onto pixels with individually controlled deposition conditions (pixel temperature, bias). Pixels are also addressed to control properties during post-deposition processing steps such as heating in vacuum or various gases to alter stoichiometry of a single material, or to alloy multiple composition materials. The addressable heating characteristics may also be used for a maskless lithography on pixel elements. The result is an array of separately, but simultaneously, processed films. Properties of film elements may be measured using electrical contact pads. The array of processed films may be used for sensors, electronic devices, greatly accelerated materials development processes, and solid state physics, biology and chemistry studies.

20 Claims, 9 Drawing Sheets

