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Ross et al.

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(54) **FLUIDIC TEMPERATURE GRADIENT FOCUSING**

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(75) Inventors: **David Ross**, Silver Spring, MD (US);
Laurie E. Locascio, North Potomac, MD (US)

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(73) Assignee: **The United States of America as represented by the Secretary of Commerce**, Washington, DC (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 483 days.

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(21) Appl. No.: **10/197,331**

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(65) **Prior Publication Data**

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Related U.S. Application Data

Primary Examiner—Alex Nogueroles

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(74) *Attorney, Agent, or Firm*—Stites & Harbison PLLC; Ross F. Hunt, Jr.

(51) **Int. Cl.**

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(52) **U.S. Cl.** **204/451**; 204/601; 204/450; 204/600

(57) **ABSTRACT**

(58) **Field of Classification Search** 204/451-455, 204/601-605, 450, 600
See application file for complete search history.

A method and device are provided for concentrating and separating ionic species in solution within a fluidic device having a fluid conduit such as a channel or capillary. The concentration is achieved by balancing the electrophoretic velocity of an analyte against the bulk flow of solution in the presence of a temperature gradient. Using an appropriate buffer, the temperature gradient can generate a corresponding gradient in the electrophoretic velocity so that the electrophoretic and bulk velocities sum to zero at a unique point and the analyte will be focused at that point. The method and device may be adapted for use with a variety of analytes including fluorescent dyes, amino acids, proteins, DNA and to concentrate a dilute analyte.

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37 Claims, 6 Drawing Sheets

