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- (54) **DEVICES, SYSTEMS, AND METHODS FOR CONDUCTING ASSAYS WITH IMPROVED SENSITIVITY USING SEDIMENTATION**
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- (60) Division of application No. 13/423,050, filed on Mar. 16, 2012, now Pat. No. 8,962,346, which is a continuation-in-part of application No. 12/891,977, filed on Sep. 28, 2010, now Pat. No. 8,945,914.
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CPC ..... **G01N 33/54313** (2013.01); **B01L 3/50215** (2013.01); **B01L 3/502753** (2013.01);  
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(58) **Field of Classification Search**  
None  
See application file for complete search history.

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(57) **ABSTRACT**  
Embodiments of the present invention are directed toward devices, systems, and method for conducting assays using sedimentation. In one example, a method includes layering a mixture on a density medium, subjecting sedimentation particles in the mixture to sedimentation forces to cause the sedimentation particles to move to a detection area through a density medium, and detecting a target analyte in a detection region of the sedimentation channel. In some examples, the sedimentation particles and labeling agent may have like charges to reduce non-specific binding of labeling agent and sedimentation particles. In some examples, the density medium is provided with a separation layer for stabilizing the assay during storage and operation. In some examples, the sedimentation channel may be provided with a generally flat sedimentation chamber for dispersing the particle pellet over a larger surface area.

**17 Claims, 10 Drawing Sheets**

