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(54) **PULSED DISCHARGE IONIZATION SOURCE FOR MINIATURE ION MOBILITY SPECTROMETERS**

(75) Inventors: **Jun Xu**, Knoxville, TN (US); **J. Michael Ramsey**, Knoxville, TN (US); **William B. Whitten**, Oak Ridge, TN (US)

(73) Assignee: **UT-Battelle LLC**, Oak Ridge, TN (US)

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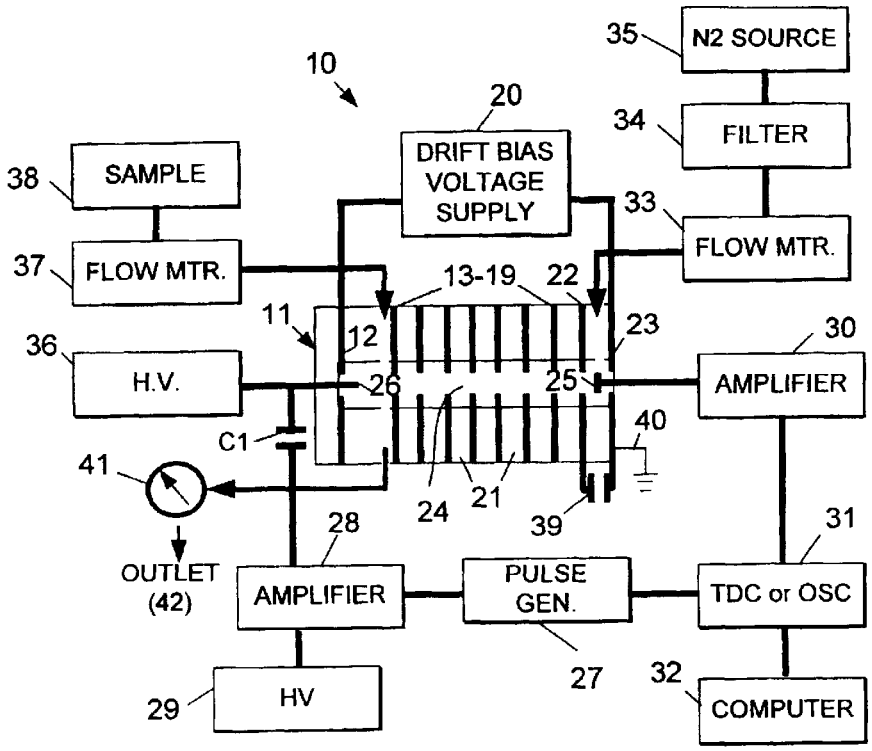
*Primary Examiner*—Nikita Wells
*Assistant Examiner*—Anthony Quash
(74) *Attorney, Agent, or Firm*—Quarles & Brady LLP

(57) **ABSTRACT**

A method and apparatus is disclosed for flowing a sample gas and a reactant gas (**38**, **43**) past a corona discharge electrode (**26**) situated at a first location in an ion drift chamber (**24**), applying a pulsed voltage waveform comprising a varying pulse component and a dc bias component to the corona discharge electrode (**26**) to cause a corona which in turn produces ions from the sample gas and the reactant gas, applying a dc bias to the ion drift chamber (**24**) to cause the ions to drift to a second location (**25**) in the ion drift chamber (**24**), detecting the ions at the second location (**25**) in the drift chamber (**24**), and timing the period for the ions to drift from the corona discharge electrode to the selected location in the drift chamber.

**16 Claims, 4 Drawing Sheets**