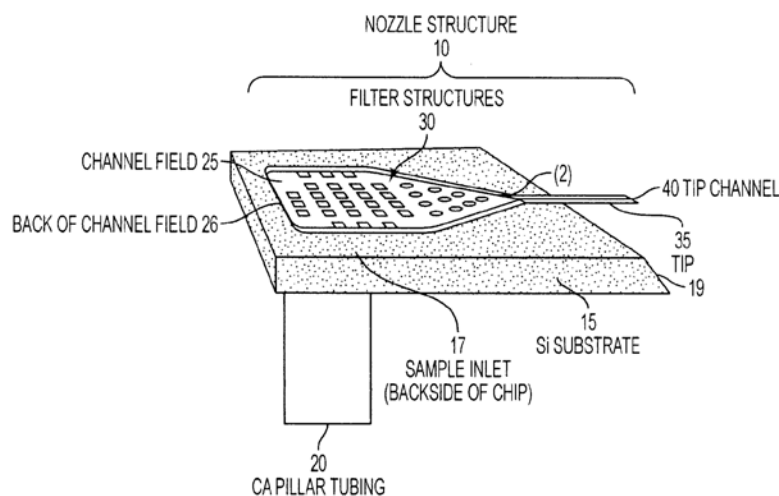


Electrospray Nozzle for Mass Spectrometry



DESCRIPTION

Microelectromechanical systems (MEMS) is a rapidly growing field that miniaturizes analytical chemistry instruments to streamline sample handling into highly automated, single package systems that can be batch manufactured. This joint Caltech and City of Hope MEMS technology is a method for processing samples accurately through a series of channels and filters, performing electrospray ionization, and delivering the spray through a hollow needle into a mass spectrometer.

Mass spectroscopy has become a valuable tool in biotech and pharmaceutical

development due to its powerful ability to quickly and accurately quantify drugs, metabolites, and biomarkers. MS is capable of characterizing proteins even in low-abundance; however, the accuracy of sample preparation prior to MS is paramount to producing decipherable data. Proteomic analyses require enzymatic digestion, buffer salts can suppress sample ionization, and non-target proteins must be separated from the sample. Though miniaturization of mass spectrometers themselves is not yet attainable, this technology assembles sample preparation steps on a single chip to minimize error and increase throughput of MS analyses. The design of each batch can be modified to interface with any spectrometer or other MEMS devices.

KEY ASPECTS

- Consolidates sample prep and electrospray ionization for mass spectrometry onto a single chip
- Low cost, mass producible, robust with equivalent performance to conventional emitters
- Compatible with any portfolio of MEMS and MS technologies
- Manufactured using photolithography

INTELLECTUAL PROPERTY

Title	US Patent Number	Issued
Polymer based electrospray nozzle for mass spectrometry	7,692,141	4/6/2010
Polymer based electrospray nozzle for mass spectrometry	7,297,943	11/20/2007

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