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(54) **MICROENGINEERED ELECTRODE ASSEMBLY**

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(57) **ABSTRACT**

Microengineered stacked ring electrode assemblies capable of acting as either RF or DC ion guides in an ion optical system, and method of fabricating same are described. The electrodes are fabricated using planar processing as sets of grooved, proud features formed in a layer of material lying on an insulating substrate. Two such structures are then stacked together to form a set of diaphragm electrodes with closed pupils. Arrangements for fabrication by patterning, etching and bonding are described, together with methods for tapering the electrode pupils or otherwise varying the ion path.

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