ABSTRACT

CROSS FLOW MANIFOLD FOR ELECTROPLATING APPARATUS

[176] The embodiments herein relate to methods and apparatus for electroplating one or more materials onto a substrate. In many cases the material is a metal and the substrate is a semiconductor wafer, though the embodiments are no so limited. Typically, the embodiments herein utilize a channeled plate positioned near the substrate, creating a cross flow manifold defined on the bottom by the channeled plate, on the top by the substrate, and on the sides by a cross flow confinement ring. During plating, fluid enters the cross flow manifold both upward through the channels in the channeled plate, and laterally through a cross flow side inlet positioned on one side of the cross flow confinement ring. The flow paths combine in the cross flow manifold and exit at the cross flow exit, which is positioned opposite the cross flow inlet. These combined flow paths result in improved plating uniformity.

FIG. 3A

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