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Mandal

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[54] **DISPENSE NOZZLE DESIGN AND DISPENSE METHOD**

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[57] **ABSTRACT**

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A dispense nozzle (10), having a narrow oblong orifice (14), is positioned over and near the surface of the substrate (22), close to the edge of the substrate. While the substrate is rotating, the nozzle dispenses fluid through the narrow oblong orifice onto the substrate surface, starting from near the outer edge (24) moving toward the substrate's rotational center (26). The narrow oblong orifice may have lips of unequal size to help direct fluid flow. A controlled rate of acceleration is maintained for the rate of translation of the nozzle across the substrate surface. Once the nozzle approaches the substrate's rotational center, the nozzle is raised to a higher height above the surface of the substrate while continuing to dispense fluid. Then the dispense stream of fluid is terminated, and the substrate is rapidly accelerated to a predetermined spin speed to evenly distribute the fluid over the surface of the substrate to a uniform film of desired thickness.

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[51] **Int. Cl.**⁷ **B05D 3/12**; B05C 11/02; B67D 3/00

[52] **U.S. Cl.** **427/240**; 118/52; 118/320; D23/213; 222/526; 222/533; 427/385.5; 427/422

[58] **Field of Search** 427/240, 422, 427/385.5; 437/231; 118/52, 620; D23/215; 222/526, 533

[56] **References Cited**

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30 Claims, 2 Drawing Sheets

