SUMMARY

[003] Several embodiments of devices and methods of cleaning a semiconductor substrate are disclosed. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only. As such, the scope of the disclosure is not limited solely to the disclosed embodiments. Instead, it is intended to cover such alternatives, modifications and equivalents within the spirit and scope of the disclosed embodiments. Persons skilled in the art would understand how various changes, substitutions and alterations can be made to the disclosed embodiments without departing from the spirit and scope of the disclosure.

[004] In one embodiment, a device for cleaning a substrate is disclosed. The device includes a double-sided scrubber including a pair of brushes. Each brush of the pair of brushes may be (a) substantially cylindrical and may be configured to rotate about a longitudinal axis of the brush, and (b) extends around a conduit that is configured to direct a liquid through the brush. The pair of brushes may be arranged such that the substrate is configured to move back-and-forth between the pair of brushes with the longitudinal axis of each brush of the pair of brushes extending parallel to each other on opposite sides of the substrate. The device comprises a gripper configured to grip the substrate and translate the substrate, wherein the gripper is configured to translate the substrate in a back-and-forth motion on a straight axis located between the brushes of the pair of brushes, and wherein the gripper is configured to translate the substrate in the back-and-forth motion while the brushes of the pair of brushes are in contact with the substrate.

A first set of nozzles may be fluidly coupled together and configured to spray a first liquid at an interface between the substrate and the pair of brushes. The first set of nozzles may include a plurality of pairs of first nozzles spaced apart from each other along the longitudinal axis of each brush. Each pair of first nozzles may include two first nozzles mirror-symmetrically positioned on opposite sides of the substrate. A second set of nozzles may be fluidly coupled together and configured to spray a second liquid at the interface. The second set of nozzles may include a plurality of pairs of second