

Study on Wet Cleaning Solutions Behavior on the Wafer Surface during the Single Cleaning Process

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In this research, the behaviors of the wet cleaning solutions on the wafer surface during the single wafer cleaning process are studied with computational fluid dynamics (CFD) simulation via volume of fluid method (VOF). The 3-D transient simulation was performed for geometaries with different height of the nozzle, properties of solution which are viscosity and contact angle with wafer surface, as well as different boundary conditions including flow rate, inlet temperature, and rotation speed of the wafer, respectively. The simulation results were analysed to study the mechanisms of how thickness and temperature distribution changed and influenced by the factors mentioned above. And the verification of simulation results which shows in Fig.1 with the observation results will be carried out in experimental set-up as Fig.2.

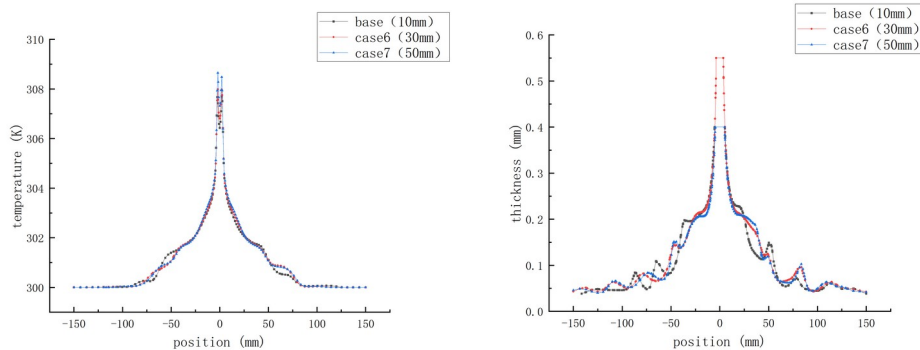


Fig. 1. Thickness distribution (left) and temperature distribution (right) line chart of wet cleaning solution at 1 sec. with different height of nozzle

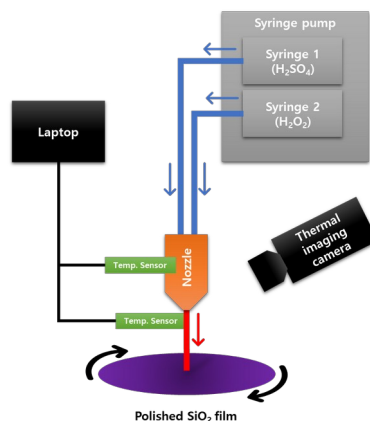


Fig. 2. In-situ monitoring system for observing the wafer surface and wet cleaning solutions simultaneously

References

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