Towards a quantitative understanding of physical particle removal technologies.

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One of the key cleaning challenges for current and future technology nodes is the removal of yield-killing particles without the addition of structural damage to the fragile patterns present on the wafers. Traditionally particle removal technologies have been bench marked by comparing particle removal efficiencies with damage addition to challenge wafers.

We will show that a local and time-dependent particle removal and damage analysis may provide better insight when comparing different cleaning conditions compared to a bench marking of particle removal efficiency versus damage formation. In addition we will show that a detailed analysis of the added damage due to a physical cleaning technology can be linked to a density of weak spots among the fragile structures present on the wafer and eventually to a better quantitative understanding of cleaning/damaging.