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**Photoresist covered wafer charging effects in pulsed plasma assisted ion implantation** JI HYUN HUR, GYUNG SOO KEUM, JAE HYUNG WON, JAE JOON OH, JAI KWANG SHIN, MATERIALS AND PROCESS DESIGN TG, CSE CENTER, SAMSUNG ADVANCED INSTITUTE OF TECHNOLOGY TEAM, FAB EQUIPMENT TECHNOLOGY GROUP, SAMSUNG ELECTRONICS TEAM — Ion implantation is a process in which energetic, high flux ions are directly introduced into a substrate such as silicon, poly silicon, and photoresist covered wafers. As a wafer is being implanted, ions can lead to positive charge build-up on the wafer. Especially for a low conductivity wafer like silicon dioxide or photoresist covered wafer, charging issue becomes more severe. Such charge build-up can cause two major problems. One is altering plasma conditions which results in reduction of ion energy and ion flux so that implantation condition is shifted lower energy/current process. And the other is wafer surface arcing owing to the large potential difference between wafer surface and powered electrode. We studied wafer charging effects in pulsed plasma assisted doping(P2LAD) for photoresist covered wafers by means of fluid plasma simulations. The results are discussed in comparison with experimental results.

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