Deposition of Amorphous Silicon Film using PECVD.

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10/01/2002

There have been some problems trying to obtain good surface deposition film of amorphous silicon (ASi) using the PECVD. Most users have problem trying to avoid ASi film from peeling after deposition. To obtain a good deposition of amorphous silicon film, the following steps are required:

1. Place the wafer at the center of the PECVD's electrode to obtain a uniform deposition. Put glass slides around the wafer to ensure it does not slide off too far from the center of the electrode after the chamber is being pump down.
2. Pump the chamber.
3. Select the ASi recipe.
4. Follow all the required steps to deposit ASi film.
5. After ASi film has been deposited, the program will automatically vent the chamber.
6. Do not take the wafer out from the chamber. Put a glass slide under the edge of the wafer to tilt it. Pump the chamber.
7. Select clean recipe to accelerate the cooling process of the chamber. Let the chamber cool to about 125°C.
8. Vent the chamber but do not move the wafer. Let the chamber cool to about 98°C with the chamber vent but leave the cover down.
9. Take the wafer out.

<u>For ASi 150 recipe</u>

Deposition rate ~ 49.17 A/min.

Stress between 756.5 – 1126.6 MPa.