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High precise local film thickness and surface correction using an ion beam toolDirk Rost¹, Monika Fritzsche², Jens Landrock², Mirko Kehr²¹Meyer Burger (Germany) GmbH, Hohenstein-Ernstthal, Germany ²Meyer Burger (Germany) GmbH, 09337 Hohenstein-Ernstthal, Germany

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The increasing requirements for microelectronics, MEMS and acoustics need very precise films with a low deviation of the film thickness across the substrate surface. Therefore a modulation of the deposited films is necessary as existing deposition methods do not meet these requirements.

This precise modulation has very high demands to the system. Meyer Burger (Germany) GmbH has more than 15 years experience in building and developing such tools. Using this tool a local, spatial resolved modification of the surface is possible to achieve homogeneities over a substrate in a sub-nanometer range. The main components to achieve such a local variation are the substrate handling including clamping, the controlled movement of the substrate and the ion beam source together with the analyzation components. The surface of each substrate can be processed individual to achieve the best result for every single layer. Even substrate to substrate modulations in the film thickness from the deposition tool can be corrected. All this has highest demands to the repeatability, uptime and precision. The repeatability is not only needed for the etch rate stability it is also needed for the accuracy of the movement system. To meet this requirements the necessary components e.g. ion beam source and substrate holder (mechanic and electrostatic chuck are available) have to be improved and analyzed continuously. The details of the tool and further possibilities of the usage are presented in this poster.

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