Introducing Fractilia's MetroLER, Increasing Accuracy for 10-nm and Below

July 6, 2017 – Austin, TX – Fractilia, the pattern roughness company, today officially released MetroLER[™] -- the first software tool developed exclusively to enable semiconductor engineers to accurately measure scanning electron microscope (SEM) images for pattern roughness.

"Pattern roughness is one of the most challenging and important issues in semiconductor manufacturing, and imec is devoting significant resources to help address it," said Kurt Ronse, Director, Advanced Lithography Program at imec. "A major barrier to solving the problem is the lack of standardization of tools and methodology that is required to measure roughness with the accuracy and repeatability that is needed."

Semiconductor features are not perfectly smooth. Pattern roughness describes the amount of variation on the edges of features. At 10nm and below, these variations may become as large as the size of the features on the chip, significantly impacting transistor performance and catastrophically affecting yield.

"At 10 nm and below, semiconductor engineers need to have a clear picture of the impact of pattern roughness on process and device performance," said Chris Mack, Fractilia Chief Technical Officer. "Yet, they have not been able to get that picture with existing tools and technology. MetroLER changes that."

One of the main barriers to solving pattern roughness issues is that engineers have not been able to accurately and reliably measure the roughness of wafer patterns. Before today, the results from roughness analysis tools would vary dramatically depending on the measurement conditions used. MetroLER's results have proven to be more than 7X less variable than traditional measurements and are accurate across a wide range of measurement conditions.

In addition, MetroLER enables SEM settings that protect resist patterns from SEM damage, a vexing industry problem known as line shrinking that reduces measurement accuracy.

MetroLER version 1.0 is the result of more than 10 years of lithography and metrology research. It has been tested on over 10,000 SEM images from more than a dozen different semiconductor manufacturing processes, using both extreme ultraviolet (EUV) and 193-nm optical lithography sources.

MetroLER 1.0 measures and analyzes pattern roughness for lines/spaces (including self-aligned double patterning), isolated edges, and isolated lines or spaces. It runs as a standalone application on a PC. Pricing is available from Fractilia upon request.

About Fractilia

Fractilia, the pattern roughness company, enables semiconductor process engineers to make effective process decisions to get the best transistor performance and yield at 10 nm and below. Fractilia is headed by industry veterans Chris Mack and Ed Charrier.

MetroLER is a trademark of Fractilia, LLC

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