Photolithography equipment & materials market is attracting new players. But success is not guaranteed...

Photolithography Equipment & Materials for Advanced Packaging, MEMS and LED Applications report, June 2015

LYON, France – June 29, 2015: “Growing photolithography equipment markets in advanced packaging, MEMS and LEDs are attracting new players; but they have to navigate complex roadmaps ...” announces Yole Développement (Yole). The “More than Moore” market research and strategy consulting company confirms its leadership in the silicon manufacturing industry with its new technology & market report entitled “Photolithography Equipment & Materials for Advanced Packaging, MEMS and LED Applications”.

Under this new report, Yole’s analysts announce a projection system market for advanced packaging, MEMS and LEDs reaching more than US$150M in 2014. To perform this report, they interviewed leaders and outsiders of this market such as SUSS MicroTec, ASML, EV Group, Rudolph Technologies, USHIO ... They analyzed their market positioning and their technical solutions.

Within a highly competitive and innovative environment, Yole’s analysis shows, at first glance, some similarities between “More Moore” and “More than Moore”. However the analysis is more complex...

“Photolithography Equipment & Materials for Advanced Packaging, MEMS and LED Applications” analysis provides a comprehensive overview of all the key lithography technologies used in advanced packaging, MEMS and LED applications and benchmarks them in terms of feature requirements. Yole’s analysts provide examples of lithography process steps for these applications. In parallel, Yole’s report describes associated technological breakthroughs and manufacturing process. More insights are included on specific...
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lithography equipment tools for advanced packaging, MEMS and LED devices.

The semiconductor industry is very often identified by its “More Moore” players, driven by technology downscaling and cost reduction. There is one clear leader supplying photolithography tools to the “More Moore” industry: ASML, based in The Netherlands. The company proposes lithography equipment with $10M unit price and incredible optics, mechanics and precision stage in order to reach sub 20nm precision (Latest announcement from ASML, April 2015). ASML is followed by two Japanese outsiders, Nikon and Canon.

“Providing this market with photolithography equipment is highly complex and there are gigantic barriers to market entry” asserts Claire Troade, Technology & Market Analyst, Semiconductor Manufacturing at Yole. Enormous R&D investments are required as the key features to print shrink ever further. Also, the tolerances specified are very aggressive and thus equipment complexity keeps on increasing.

In the “More than Moore” industry the Holy Grail isn’t downscaling any more – it is adding functionality: according to Yole’s analysis, there are two clear leaders today: SUSS MicroTec (Latest order: lithography tools from TDK, Feb. 2015) in the MEMS and sensors industry, and Ultratech in the advanced packaging industry. Both players are closely followed by the following outsiders, EV Group, Rudolph Technologies and USHIO.

“But the similarities between both worlds, are only superficial”, comments Amandine Pizzagalli, Technology & Market Analyst, Advanced Packaging & Semiconductor Manufacturing at Yole. “Indeed market entry barrier is much lower in the “More than Moore” market. Equipment in the Advanced Packaging, MEMS and LEDs industries is less complex but customer adoption needs are higher, which leads to a much broader photolithography landscape”, she adds.

The photolithography market structure for these three industries is very different compared to the “More Moore”, or mainstream semiconductor, industry. New entrants can penetrate these markets with a good knowledge of the technological building blocks. But the key to success is to adapt the equipment to the specific customer’s needs. That means that these markets are complex to develop and that they take a long time to penetrate.

To develop their knowledge and expand their range of products, some players entered through acquisition. Rudolph Technologies acquired Azores Corp. in 2012 to enter the advanced packaging
photolithography equipment arena. Also in 2012, SUSS MicroTec acquired Tamarack Scientific Co. Inc. to enlarge its semiconductor back end photolithography equipment market. Others like Orbotech, which acquired a leading MEMS and advanced packaging company, SPTS, is today only present in substrate and PCB direct imaging.

In this report, competition trends are carefully analyzed and presented as a competitive landscape and competitive analysis of the major equipment and materials suppliers involved in Advanced Packaging, MEMS and LED applications. Finally, a section is also dedicated to disruptive technologies such as LDI, laser ablation and nanoimprint lithography, which could reshape the lithography landscape in the future. Yole describes possible reshaping scenarios, including acquisitions, mergers, and joint ventures, along with their anticipated impact on the global photolithography market.

A detailed description of the lithography equipment and materials report is available on www.i-micronews.com, manufacturing section.
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About Photolithography Equipment and Materials for Advanced Packaging, MEMS and LED Applications report:
Rates: Euros 5,990.00 (Full report - Multi user license). For special offers and the price in dollars, please contact David Jourdan (Phone: +33 472 83 01 90).

“Photolithography Equipment and Materials for Advanced Packaging, MEMS and LED Applications” report from Yole Développement will be available on July 6, 2015.

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Amandine Pizzagalli is in charge of the equipment and material areas for the Advanced Packaging and Manufacturing team at Yole Développement. She graduated as an electronics engineer, with a specialization in semiconductors and nanoelectronic technologies. In the past, she worked for Air Liquide with an emphasis on CVD and ALD processes for semiconductor applications.
Claire Troadec has been a member of the MEMS manufacturing team at Yole Développement since 2013. She graduated from INSA Rennes in France with an engineering degree in microelectronics and material sciences. She then joined NXP Semiconductors, and worked for 7 years as a CMOS process integration engineer at the IMEC R&D facility. During this time, she oversaw the isolation and performance boost of CMOS technology node devices from 90 nm down to 45 nm. She has authored or co-authored seven US patents and nine international publications in the semiconductor field and before joining Yole Développement managed her own distribution and e-commerce company.
Jérôme Azémar is a member of the Advanced Packaging & Manufacturing team. Upon graduating from INSA Toulouse with a master’s in Microelectronics and Applied Physics, he joined ASML and worked in Veldhoven for three years as an Application Support Engineer, specializing in immersion scanners. During this time he acquired Photolithography skills which he then honed over a two-year stint as a Process Engineer at STMicroelectronics. While with ST he developed new processes, co-authored an international publication and worked on metrology structures embedded on reticles before joining Yole Développement in 2013.

Companies cited in the report:

About Yole Développement
Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Manufacturing, Nanomaterials and Power Electronics. The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.
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