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STMicroelectronics Unveils Thin-Film Piezoelectric MEMS Technology to Drive Growth in Customization and Personalization

Norway's poLight[®] using the technology to revolutionize mobile-camera autofocus function

Geneva, September 23, 2014 - STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, the world's top MEMS (Micro-Electro-Mechanical Systems) manufacturer and the leading supplier of MEMS for consumer and mobile applications, today announced that it is commercializing its innovative piezoelectric MEMS technology. This innovation combines the Company's long-established leadership in high-volume MEMS design and manufacturing with the many new application opportunities offered by piezoelectric¹ technology. ST's TFP (Thin-Film Piezoelectric) MEMS technology is a foundational process platform that can be readily customized, allowing ST to work with customers around the world to jointly develop specific MEMS products, optimized for particular applications.

One of the first customers to take advantage of ST's TFP process is poLight, whose innovative TLens[®] (Tuneable Lens) uses a piezoelectric actuator to change the shape of a transparent polymer film, imitating the focussing function of the human eye. This makes it the ideal solution for camera auto-focus (AF) applications, which up till now have mostly relied on large, power-hungry, and expensive Voice Coil Motors (VCM).

"Piezoelectric actuators and sensors can now be manufactured in our Agrate 8" Fab that has produced billions of motion sensors, taking full advantage of ST's long-standing position as the world's leading manufacturer of MEMS devices," said Anton Hofmeister, Group Vice President and General Manager of Custom MEMS Division,

¹ Piezoelectricity is the physical phenomenon from which some materials generate an electrical potential in response to an external mechanical force (the "direct" piezoelectric effect) or, conversely, expand or contract along an axis in response to an applied electric field (the "reverse" piezoelectric effect). This phenomenon is used in simple gas lighters to complex medical applications such as scanning tunnel microscopy, though, most existing applications use bulky and expensive ceramic piezoelectric materials. ST's TFP MEMS technology combines the low power consumption and high-speed response of the piezoelectric effect with the cost advantages offered by semiconductor process manufacturing.

STMicroelectronics. "Our TFP MEMS technology rewrites the script, opening up new cost/benefit scenarios that will, in turn, enable many new applications."

"poLight will use STMicroelectronics TFP MEMS technology to manufacture its TLens autofocus lens, a product that brings new camera autofocus performance to smartphones," says Christian Dupont, poLight Chief Marketing Officer. "For example, TLens enables cameras to focus instantaneously, 10x faster for 20x lower battery consumption, as well as to refocus after taking the picture and implement stable continuous autofocus for video recording. This breakthrough combines poLight's innovative technology and ST's ability to optimize their TFP process to provide the required strong piezo actuator through a high-volume manufacturing process that is key for our smartphone customers."

The pilot line for ST's new TFP MEMS platform was partially funded by the European LAB4MEMS program. The technology has many important potential applications for actuators like inkjet printheads in Commercial, Industrial and 3D printing, but can also be used to develop piezo sensors in fields like energy harvesting. ST is targeting volume production for its pilot customers in mid-2015.

About STMicroelectronics

ST is a global leader in the semiconductor market serving customers across the spectrum of sense and power and automotive products and embedded processing solutions. From energy management and savings to trust and data security, from healthcare and wellness to smart consumer devices, in the home, car and office, at work and at play, ST is found everywhere microelectronics make a positive and innovative contribution to people's life. By getting more from technology to get more from life, ST stands for life.augmented.

In 2013, the Company's net revenues were \$8.08 billion. Further information on ST can be found [at www.st.com](http://www.st.com).

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