

Welcome to aixACCT Systems,

the world leader in metrology of piezoelectrics expanding into new areas!

aixACCT hosted the International Workshop on Piezoelectric MEMS in Aachen Germany May 18th and 19th. For two days a group of 60 people with 80% industry participants gathered to discuss the future of piezoelectric thin films for MEMS applications. A constructive and interactive panel discussion concluded the workshop with two main messages that piezoelectric thin films are ready for moving into many more applications and that this industry focused workshop should continue to accelerate the field.

Today the major products that employ piezoelectric thin films as actuators and/or sensors in the MEMS area are inkjet printer-heads, micro-switches and tilted mirror arrays but there are many more to come.



New tools release – aixACCT Systems developed a new system specialized for characterizing RRAM materials and also the first tool dedicated to thermoelectric material testing will be released.

Happy reading!
Yours sincerely,
Stephan Tiedke

▪ **aixACCT Systems celebrates 10 year anniversary**

aixACCT Systems GmbH was founded in 2000 and started with its first product the TF Analyzer 2000. This was the most sophisticated ferroelectric test system in the market and rapidly helped aixACCT to grow its business becoming the world leader in piezoelectric test equipment. In 10 years aixACCT sold several hundred TF-Analyzer and almost 100 aixPES, aixCMA and aixDBLI system solutions.



Today aixACCT offers a wide variety of test solutions spanning from electrical to electro-mechanical and optical test systems build to customer specifications for R&D operations to in-line testing for production. Please celebrate our birthday with us and get an extra 10% off on any TF-Analyzer or Easy Check Tester!

(Offer valid through Dec. 2010)

■ aixACCT Systems receives ISIF Award

Development of ferroelectric testers and advancement in piezoelectric characterization tools is the official announcement from the ISIF jury to give this price to aixACCT Systems. "The award is an acknowledgement of ten years continuous improvement of measurement methods and the support aixACCT gave to the community of material researchers to get better inside into material behavior."

A couple of inventions have been made during this period: in-situ compensation of parasitic capacitance for submicron capacitor testing (2002). 1T-1C cell testing for on chip ferroelectric memory capacitor testing in collaboration with Infineon/Toshiba (2004) and the world's first commercially available double beam laser interferometer (aixDBLI) for 6'' and 8'' wafers (2005) and the first fab installation including wafer robot and SECS GEM interface of an aixDBLI (2008).



■ Workshop on piezo-MEMS was a great success!



aixACCT Systems had taken the initiative together with Paul Muralt, EPFL to bring together world leading scientists and industry manager to exchange latest knowledge and to discuss trends and possibilities in piezoelectric MEMS.

Mareike Klee of Philips showed in her plenary talk the excellent performance of thin film devices and micromachined bulk devices, which is great news to the piezo-MEMS market. Paul Muralt of EPFL, Susan Troiler McKinstry of Penn State, and Kenji Shibata

of Hitachi Cable reported on AlN, PZT and KNN state of the art materials. All of them showed great progress in film performance, which already stimulated new product developments.

It was shown that the entire infrastructure for the piezoMEMS production is available today and various vendors introduced their deposition tools, etching and testing tools. EPCOS, EPSON and Siemens impressed with their successful market introduction of AlN and PZT based piezoelectric MEMS products.



Susan Trolier McKinstry giving a talk on PZT films for MEMS devices

The essence of the workshop is that piezoelectric MEMS are a mature technology which will enable further products in the near future and push the system integration to the next level. Piezo-filter and ink jet printer heads are currently the mass produced products, but particle

detection, micro switches, tilted mirror arrays, and pressure sensors etc. will become future products based on this technology. PiezoMEMS offer many advantages including smaller driving voltages at the same mechanical displacement comparable to electrostatic MEMS and no static power consumption.

Here are a few comments from participants of the workshop:

“Definitely one of the most interesting workshops of the last years, also because it was well focused...” Dr. Metzger, EPCOS AG, Germany

“Very useful workshop, well organized, something worth repeating” Dr. Westland, Océ Technologies, The Netherlands

“What a great meeting...” Dr. Jowoong Ha, INOSTEK Inc., Korea

■ Material Research with automated aixPES system – fast prototyping – high through put testing

Most of the ceramic material suppliers worldwide nowadays use the piezoelectric evaluation system aixPES of aixACCT Systems for material property evaluation. The automated testing allows rapid prototyping of new material compositions and high throughput testing in order to scan material compositions. More than 50 systems have been delivered up to now.

KAUST extends its testing capabilities to aixPES, aix4PB and aixDBLI

aixACCT Systems, world leader in testing piezoelectrics, has equipped King Abdullah University of Science and Technology in Jeddah Saudi Arabia. The modular concept of the TF ANALYZER product line, which allows comprehensive characterization of piezoelectric thin films, thick films and bulk ceramics beside the unique resolution and the flexibility of the system concept made decision easy for Dr. Zhihong Wang of KAUST for this configuration.



“With this set up we can test all kind of piezoelectrics here at KAUST. After system installation we were already able to test a PZT thin film membrane deflection and also the thin films material expansion during membrane operation, canceling out the bending of the membrane.”



Georgia Tech added a combined aixDBLI and aixPES to their tool set

Prof. N. Bassiri-Gharb needed the capabilities to characterize piezoelectric thin films as well as piezoelectric bulk materials. In order to reduce cost the aixDBLI and aixPES were combined into one system which allows for sharing parts of the electronics of both setups.

“aixACCT helped me to get all the characterization capabilities I need into one system. It was a very collaborative effort and aixACCT was very helpful especially at the beginning when we were still learning to operate the tool. They also implemented software changes we had suggested to make our measurements more convenient. Great experience to work with aixACCT!”

▪ Meet aixACCT at the ...

- **MEMUNITY** Workshop September 15th, Dortmund, Germany
Presentation by K. Prume on "Thin film material testing and process qualification of the transversal piezoelectric response by 4-point bending technology"
- exhibitor of the **IWPMA 2010** - International Workshop on Piezoelectric Materials and Applications in Actuators in Antalya / Turkey, October 10 - 13
<http://iwpm2010.com>
- **MRS** Fall meeting exhibition in Boston, November 30 - December 2, 2010

▪ Recent publications:

"High rate sputtering of thick PZT films for MEMS", H. Jacobsen, K. Prume, B. Wagner, K. Ortner, T. Jung, Journal of Electroceramics, Springer online publication DOI 10.1007/s10832-010-9615-6