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Dear Customer

Welcome to our latest edition of SAFC Hitech's Insight e-news. We invite you to forward this message to interested parties at your workplace and encourage them to sign up to receive their own copy in the future.

Message from Dr. Frank Wicks, President, SAFC

Continued Investment in Innovation and Manufacturing Points to a Bright Future for SAFC Hitech

As the President of SAFC®, the custom manufacturing and services division of Sigma-Aldrich™ Corporation, I was pleased to be able to make known the announcement October 1, 2007 that Epichem® officially became SAFC Hitech™, which was the culmination of an intense re-branding campaign that started shortly after the company's acquisition in February of this year. During this period, SAFC Hitech engaged its target audiences aggressively to communicate its key messages:



- SAFC Hitech provides a unique chemistry service translating application understanding into performance materials worldwide.
- Through collaborative partnerships and an integrated approach from research and development, process development and scale up to commercial manufacturing, SAFC Hitech invests in innovation and manufacturing to enable current and future technology requirements.

By giving our customers complete access to our chemical know-how and working closely with them and our collaborative partners in academia on the development of new materials and process integration schemes, we are able to ramp-up to mass production volumes and thus accelerate time-to-market to proliferate advanced technologies. A short time ago at the Intel® Developers Conference, Dr. Gordon Moore, the father of Moore's Law and one of the founders of Intel®, described the development of new materials and their integration into working components as "the biggest change in transistor technology since the 1960s". Considering the quantum leap that the electronics industry has taken in the last 10 years alone, the magnitude of Dr. Moore's statement is huge. As IBM, Intel®, AMD and other industry giants announce that they are working with more exotic materials such as Hafnium and other high-k dielectric materials, SAFC Hitech is well ahead of the curve, already working with materials for the next technology nodes and beyond. In short, we are ideally placed to capitalize on the supply of advanced materials for future technologies.

The benefits of our unique business model to both the organization and our customers are significant. As my colleague, Barry Leese outlined in our July company newsletter, the acquisition of Epichem "completed the SAFC Hitech jigsaw", positioning us perfectly to blossom in our next phase of growth and development. With continual investment in materials innovation and manufacturing, for example, our recently-announced new manufacturing facility in China that will support the Hitech business, we will continue to turn the current and future technological needs of the semiconductor, compound semiconductor and performance materials markets into reality.

SAFC Hitech wins EuroAsia Industry Award 2007



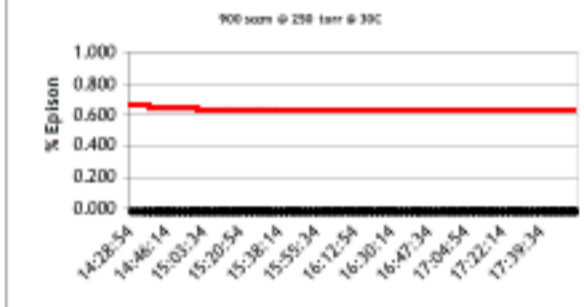
Semicon West in San Francisco, California, saw the presentation of the R&D Initiative Award to Barry Leese, president SAFC Hitech, to reflect on the excellent research collaborations established by the SAFC Hitech Research department to develop precursor technologies for tomorrow's production devices and beyond into alternative material systems for 10 years down the line. The cost of research and development for new innovations in microelectronics manufacturing have increased to the point that most companies are no longer able to afford to develop new ideas on their own and so effective partnerships are key to allow the industry to maintain its impressive rate of technological advancement.

SAFC Hitech works with leading groups around the world and has helped build up complementary facilities to ensure precursor deposition trials in both CVD and ALD equipment is performed to the highest standards. The layers are tested using industry relevant methods to move forward process integration and allow the rapid choice of optimum precursor and the relevant operating parameters. In particular the Universities of Liverpool, Helsinki, Bath and UCL have been key partners to develop new product ranges.

EpiFlux™ bubbler performance proven in production

The improved design bubbler for solid precursors, in particular TMI, has been undergoing rigorous testing in a production environment and continues to demonstrate advantages in transport rate and output flux stability. Also efficiency is increased leading to cost of ownership reductions to help streamline the complete production process. The table below highlights the quality of InP layers deposited under demanding conditions whilst the plot shows the low fluctuation of output flux stability achievable during usage.

Source material	InP Hall test				
	RT Hall mobility	LT Hall mobility	RT Hall Bulk N	LT Hall Bulk N	CV level
Solid TMI in EpiFlux™	5320	193000	1.12E+14	1.24E+14	1.60E+14
Solution TMI™ in standard bubbler	4850	150000	9.77E+13	8.00E+13	~1.5e14



New SAFC Hitech website launch highlights complete product range

The legacy Epichem and SAFC websites have been combined and undergone a complete transformation to provide a comprehensive portal for customers to view the full range of offerings from SAFC Hitech. Particular attention has been paid to the navigation and layout of the site to allow easy movement through the various sections and further improvements are scheduled to role out the familiar periodic table introduction screen to access individual precursor pages in the near future. It is hoped that the upgraded functionality will make finding exactly what is needed more straightforward and comments are always welcome to ensure these changes have been successful.



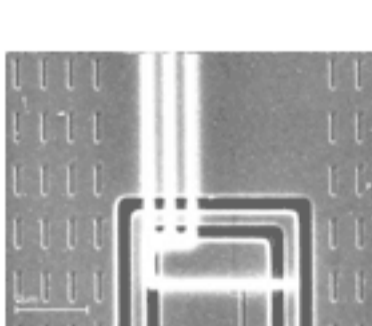
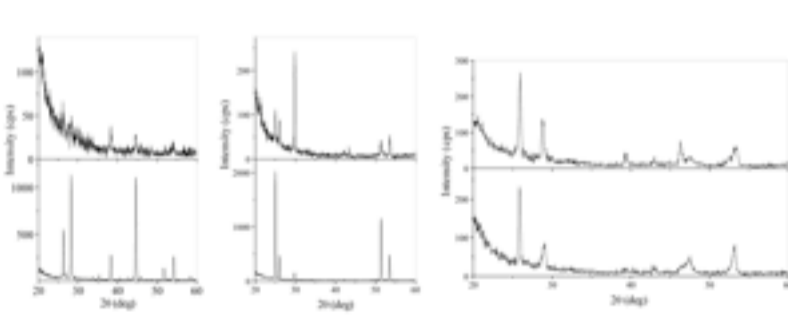
Visit www.safchitech.com to see more.

CHEMAPH project moves on to the next phase

Phase Change Memories (PCM) was identified some years ago as a high potential solution to aggressive scaling issues for memory devices needed to keep technology developments in line with Moore's law. To be compatible with existing processes vapour phase deposition techniques are preferred and a consortium was set up in 2005 to investigate MOCVD approaches. Supported by the European Commission in their competitive research call the CHEMAPH project includes some of the leading research groups in this area.

The main phase-change chalcogenide material system that has been investigated by the CHEMAPH team is Ge₂Sb₂Te₅ (GST), as it was already the basis of characterised media and prototype PCM devices.

Numerous new precursors have been prepared, characterized and studied in deposition trials to establish the best chemicals and then the best operating parameters to obtain stoichiometric, single phase GST. The best layers have been further processed into simple device structures for ongoing evaluation.



The project is over halfway through its budgeted timeline and progress is such that the objectives and goals are on target to be fulfilled. Further details of results will be disseminated at conferences and in peer reviewed journals over the coming months.

Chemical Vapor Deposition of Chalcogenide Materials for Phase-change Memories - EU IST Project # 027561 www.mdm.infm.it/CHEMAPH

R&D gains access to increased resources



Peter Heys R&D director explains the benefits to product development and new product introduction from the merger of Epichem with Sigma-Aldrich.

"I am excited by the cross fertilisation of ideas from one subsidiary to another and the synergic benefits gained therefrom. It is clear that the expanded research team can draw on a wealth of expertise to allow an improved functionality across the whole range of our activities. The combination of Epichem's innovation and Sigma-Aldrich's production capacity ensures that the right chemicals are identified, isolated, purified, characterised, proven and transferred to production in a seamless flow with quality retained throughout each batch to batch volume increase. The high volume manufacturing equipment now available for our new products is impressive and light years ahead of previous facilities."

Since the acquisition progress has been made thanks to input from AAPL a Sigma-Aldrich affiliate in Urbana, Wisconsin. Thanks also to having been introduced to members of Sigma-Aldrich's organic chemistry research group, a new and better route to a research chemical has been established.

For a virtual lab tour visit the new SAFC Hitech website

http://www.sigmaldrich.com/SAFC/Hitech/Manufacturing_Sites.html

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