

## ALMA Winter 2000 Symposium Wrap Up

A record number of attendees and exhibitors gathered together for ALMA's recent winter symposium held at the Tropicana Hotel on January 5, 2000. The Symposium's theme was that of "Trends and New Technologies in Loudspeaker Designs".

Following the previous evening's Members Only Dinner, the day's events kicked off with the Components Standards Subcommittee Meeting and Standards Committee Meeting (committee meeting updates can be found elsewhere in this issue).

The afternoon session began with the General Assembly Meeting which included Mike Lamm's President's Address, committee updates, a report by ALMA's new Managing Director, Lynn Russo, and election of new members to ALMA's Board of Directors. The General Assembly Meeting concluded with the presentation of a Board Emeritus Award to long-time ALMA supporter Loyd Ivey, President of MTX/Mitek Corporation.

Following the presentation, it was time for a series of invited technical papers.

F. Joseph Pompei, a research assistant and graduate student at MIT's Media Lab, gave the symposium attendees an in-depth presentation and demonstration of his unique "Audio Spotlight" transducer. Simply put, the device transmits a narrow beam of ultrasound, which, due to the inherent nonlinearity of air itself, distorts (changes shape) very slightly as it travels. This distortion creates, along with new ultrasonic frequencies, audible artifacts, which can be mathematically predicted, and therefore controlled. By constructing the proper ultrasonic beam, this nonlinearity can be used to create, within the beam itself, an audible sound beam containing any sound desired.

The circular transducer is very thin, and can be constructed in a variety of sizes and configurations as needed. A typical Audio Spotlight transducer has an active area of approximately 1 foot diameter, and, depending on size and frequency content, projects an approximately three-degree wide beam of sound audible to well over 100 meters. Further details on the "Audio Spotlight" can be found on Joe's website:  
<http://sound.media.mit.edu/~pompei/>

An important concern for those who have invented a new design or technology is that of protecting it. To that end, the next speaker, J. Andrew McKinney, Jr., enlightened the audience with a compelling discussion of intellectual property law. This was Andy's second appearance as an ALMA guest speaker and he discussed in detail how patents, trademarks, copyrights and trade secret rights each "establish a limited monopoly of a different type". His thought-provoking presentation gave rise to many questions from the audience and it was clear that this is a topic of great interest to ALMA members. We hope to have Andy return again as a guest speaker at a future symposium.

ALMA recently opened up its membership to companies and individuals from around the world. The final invited paper of the day was presented by Henry Azima, President and

Chief Technology Officer of New Transducers Limited (NXT), who have the distinction of being ALMA's first international member.

Henry's presentation guided the audience through the concept of NXT's patented "Surface Sound" technology. By abandoning conventional, pistonic drive units in favor of a randomly vibrating panel (diaphragm) that exhibits random modes of vibration across its surface, NXT claims to have developed a device that is insensitive to diaphragm size and mass (although mass will affect sensitivity), while possessing wide coverage angles and broad bandwidth. Its unique, flat panel geometry makes it suitable for a number of different applications never before possible with conventional cone type transducers. A complete discussion of the NXT technology can be found on their web site: <http://www.av-international.com/>

The final event of the day was a panel discussion on future technology trends in our industry. Moderated by Dr. Floyd Toole, Corporate VP of Engineering at Harman International, panelists from various market segments provided the symposium attendees with their views of where our industry is headed. Most of the panelists were in agreement that the trend is towards smaller and lighter designs possessing higher power handling capacity. Tom Nousaine noted that loudspeaker systems would see an increasing integration of onboard electronics and signal processing, a sentiment echoed by Mark Gander of JBL Pro.

Mike Klasco of Menlo Scientific observed that loudspeaker design has seen little change over the past 30-40 years and that improvements in transducer design will continue to be driven by the availability of new materials. Higher energy magnets, improved cone materials and higher temperature voice coil materials are all components which will continue to see significant future advances.

As transducers become smaller and more powerful, our ability to predict and measure their large signal parameters will become more and more critical. Dr. Joe D'Appolito noted that while today's PC based measurement systems have made precision measurement techniques more available and affordable to the masses, their capabilities are not that much different than those of older, analog equipment. Since smaller, lighter driver designs tend to be driven closer to their limits and non-linear range, the need for accurate large signal measurements will continue to increase and future advancements in measurement systems should focus upon this critical need.

Commenting on trends in internet/computer audio, Tom Wethern, Chief Engineer at Cambridge SoundWorks, noted that cost to implement, performance and market advantage will continue to dictate the type of speakers are used in computer applications. Other issues facing this market include standardization of transmission formats and what, if any, types of virtualization techniques should be used in the delivery of the audio signal.

After evaluating some recent designs manufactured offshore, Hisco's Howard Doctor sounded the alarm for after market automotive loudspeaker manufacturers by observing

that “The Asians have the recipe”. A new wave of product from Asia is offering “high performance levels at half the normal retail price”. Other trends influencing the future of auto sound will be the increasing frequency of vehicle leasing, an aging marketplace and the improvement of OEM equipment.

Finally, Mike Lamm of Atlas-Soundolier provided some insight into the future of the commercial loudspeaker market. According to Mike, people will tend to have higher expectations of commercial sound products due to the continued improvement in home, automotive, professional and computer loudspeaker systems. New technology will continue to trickle down from those markets to the commercial designs and may include an evolution past mono to include more spatial information.

A more complete, written summary of each panelist’s comments will soon be available on ALMA’s website: <http://www.alma.org>