

## PRESENTATION

**Martin Misakian**  
**National Institute of Standards and Technology**  
**Gaithersburg, MD**

*The synopsis preparer was also the presenter for this topic (**Exposure Systems**). His presentation closely followed material in his synopsis.*

## SUMMARY OF DISCUSSION

*Several issues came under discussion following the presentation on exposure systems by Dr. Martin Misakian. The summary below was prepared from the symposium transcript.*

The conclusion reached by the presenter, Dr. Martin Misakian, and in the discussion was that an exposure system producing any field parameter or combination of field parameters encountered by most people could be designed and built. Discussants pointed out that a possible exception to this claim is the recently suggested use of circularly polarized horizontal electric field that would allow laboratory animals to move about in a constant field. Misakian suggested that it may be possible to produce horizontal circularly polarized electric fields with two parallel plate systems with guard bands that have orthogonal axes (in the horizontal plane) and with applied voltages that differ by 90 degrees in phase. However, circularly polarized electric fields are constant only in magnitude and not in direction, a fact that may be of significance if induced electric fields are being evaluated in an animal model study.

There was discussion of the merits of recording real-world environmental fields and then imposing them as exposures for laboratory animals. Although this is hypothetically possible, several problems occur, including selection of the particular environment for recording, selection of the parameters to be recorded (e.g., which of the many possible transients), and interpretation of results.

Discussants pointed out difficulties associated with including transients in an exposure system. The exposure system must be engineered to produce the desired transient wave shape. Transients produced in the air are changed in the body. Some discussants felt that transients could be accommodated, but that, again, it was a question of time and money. Because of the broad range of possible transient wave shapes, decisions must be, and are, made to limit the scope of investigations. For example, an IIT Research Institute study of transients necessarily limited the pulses to those with frequency content that could be reproduced in the exposure system.

Some felt that the background field of 2 mG or less recommended by Misakian for exposure systems in the synopsis might be too high. Misakian responded that this level was typical where exposures were hundreds of times higher than the background, and that for lower exposed conditions it would be appropriate to reduce the background field.

In response to a question about field uniformity, Misakian indicated that all the animals in a system should be exposed to the intended field, plus or minus 10 percent. The central value can be used as a reference point to do this.

*Submitted written comments on this topic are found in Appendix C.*

*EXPOSURE SYSTEMS*

This page intentionally left blank.