Chandra S. Vikram
1950–2007

Chandra S. Vikram, who was well known for his contributions to speckle metrology, holography, interferometry and optical logic, died suddenly on August 17, 2007, in Huntsville, Ala.

Chandra received his Ph.D. in optics from the Indian Institute of Technology (IIT) in Delhi when he was just 23 years old. Earlier, he had obtained an M.S. in physics from IIT Kanpur and an M. Tech. in applied optics from IIT Delhi. He had research appointments at IIT Delhi (1973-1977) and Pennsylvania State University (1977-1989) before becoming a research professor at the University of Alabama in Huntsville (1989-2007) and Fisk University (2004-2007).

Chandra worked at the cutting edge of optical techniques and instrumentation for a host of engineering applications—which is evident from his 150 journal publications, six book chapters and two books (and one more in press). His innovations in speckle metrology led to his election as an OSA Fellow when he was just 36.

Particle-field holography was another major research interest of Chandra's. His expertise in this area was recognized by his editorship of a SPIE Milestone Volume on the subject. He published a splendid monograph on the same subject in 1992, and was made a SPIE Fellow in 1993. Ten years later, he was honored by SPIE with the Dennis Gabor Award for Holography, and IIT Delhi then bestowed the rank of distinguished alumnus on him.

Chandra's contributions on the role of diffraction halo in the analysis of Young's fringes were pioneering. He identified the problem and proposed several remedies, some of which are routinely used nowadays in the paper industry. He developed a technique that is widely applied to solve real-life measurement problems—for example, to track glacier motion.

By locally heating a surface and doing subsequent surface deformation analysis by laser speckle interferometry, he and his co-workers proved that very accurate quantitative residual stress analysis can be obtained for inspections of marine, nuclear, civil and industrial structures.

Chandra developed the aberration theory of particle-field holograms. His aberration-free geometries can yield true aperture-limited resolution, with applications not only in the traditional holography of small objects but also for helmet-mounted displays, hologrammetry of underwater and remote structures, etc.

Chandra also developed a comprehensive theory of far-field holography. The most general formulations are classic and will be useful to other researchers for a long time. For example, he showed how to derive two or more quantities (such as temperature and concentration) from an interferogram. Chandra was awarded in 1994 a NASA Certificate of Recognition for his work on multi-color holography.

Chandra can be credited with the introduction of several non-interferometric optical approaches for thermal expansion measurements. His innovations solve major measurement problems, particularly when traditional approaches fail for newly synthesized materials.

At Fisk, over the past few years, Chandra helped develop reversible, cascadable, energy-lossless optical logic devices that allow processing at any bandwidth that can be modulated onto a laser beam.

Chandra is survived by his wife Bina, daughter Preeti and son Tushar.

— H. John Caulfield
Fisk University

Akhlesh Lakhtakia
Pennsylvania State University