Optical Research in Asia

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It is our pleasure to present Asia's achievements in optics in this special section of *Optical Engineering*. Twenty-two papers appear here and one paper will appear in a subsequent issue. These papers cover the fields of optical signal processing and computing, optical devices, theoretical optics, metrology, and image processing. The papers are from Japan, Korea, India, China, Hong Kong, and Taiwan, and provide a snapshot of the current research being performed. We hope that the papers presented in this special section contribute to a better understanding of some of the current research in Asia.

The first paper, by Okamoto, Egawa, and Asakura, develops a speckle correlation method in which a liquid crystal television is used as a spatial filter to measure the paths of the lateral motion of rough objects. Eiju et al. describe in the second paper a high-resolution laser Doppler velocimeter with small measurement volume. In the third paper, Eiju et al. develop a novel optical signal processor for analyzing laser Doppler velocimeter output signals. Kamemaru, Itoh, and Yano describe in the fourth paper a hybrid pattern recognition system for character recognition. Then, Yamaba and Miyake describe a color character recognition method based on human perception criteria.

In the sixth paper, Zhuang et al. investigate VUV/XUV spectroscopy and stimulated radiation of clusters in noble gas beams. Wang and Chen establish in the seventh paper a united energy model of the free-electron laser with different magnetic structures to calculate the energy transfer rate of the free-electron lasers under the conditions of weak and strong signals. Wang et al. investigate the effect of laser illumination conditions on the uniformity of the linear laser plasmas in the eighth paper. Sun et al. calculate and design in the ninth paper the bistable optical device-based nonlinear interference filters. The tenth paper, by Luo et al., investigates the influence of laser polarization on the Zeeman effect of the uranium atom by the laser induced fluorescence technique. Liu studies in the eleventh paper the quantum statistical properties of field modes for a three-level atom with multiphoton transition interacting with two cavity fields. Then, in the twelfth paper, Chen presents a 4*f*-type optical system with a holographic mask and two Fourier lenses for performing matrix multiplication.

The thirteenth paper, by Jang et al., describes fully programmable higher order optical interconnections using holographic lenslet arrays and spatial light modulators. Kim proposes in the fourteenth paper a method of spectroellipsometric analysis to calculate the effects of inhomogeneous layers with arbitrary refractive index profiles along the surface normal.

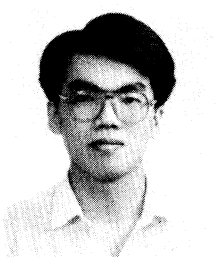
In the fifteenth paper, Sriram, Kothiyal, and Sirohi describe new self-referencing configurations using Talbot and double-wedge plate shear interferometric techniques. Dawar et al. report in the sixteenth paper a systematic study on the fabrication and characterization of planar optical waveguides in Z–$LiNbO_3$ fabricated by a proton exchange technique using orthophosphoric acid. Then, Asundi describes in his paper the use of computer-generated gratings for qualitative visualization and quantitative analysis of virtually all moiré methods.

The eighteenth paper, by Yau et al., proposes a scheme of performing shift- and rotational-invariant associative memory. Tarng and Chen investigate in the nineteenth paper the recovery of an optical beam, distorted by a turbulent medium with random gain (loss), using phase conjugation. In the twentieth paper, Kuo develops an equivalent circuit model for a single well resonant tunneling diode, which is very useful for a high-speed A/D converter. Shih, Hung, and Lin propose in the twenty-first paper a new technique for calibrating a camera with high accuracy and low computational cost. Finally, Kuo and Huang propose a new image-coding technique that is robust to different types of channel and quantization noise.

The twenty-third paper, "Effects of grating spacing on the Ronchi test," an excellent work by D.-S. Wan and M.-W. Chang, presents a novel calibration technique for a phase shift inter-

ferometer and will appear in a subsequent issue of *Optical Engineering*.

We would like to thank the authors who submitted the papers for this special section and the reviewers for their timely comments. If not for them, this special section could not have been possible. We are also grateful to Dr. Brian J. Thompson for giving us this opportunity to serve the readers of *Optical Engineering*. The kind help of Dr. Thompson and the editorial staff of *Optical Engineering* during our editorship was truly appreciated. Finally, special thanks must be given to Y. F. Hsu and S. T. Chang for their excellent support.



Chung J. Kuo received BS and MS degrees in power mechanical engineering from National Tsing Hua University, Taiwan, in 1982 and 1984, respectively, and a PhD degree in electrical engineering from Michigan State University in 1990. He was an instructor at the Army Ordnance School, Taiwan, from 1985 to 1986, and a visiting scientist at the Opto-Electronics & System Laboratory, Industrial Technology Research Institute, Taiwan, during the summer of 1991. Dr. Kuo has been an associate professor of electrical engineering at National Chung Cheng University, Taiwan, since 1990 and a part-time member of the faculty of electrical engineering at National Cheng Kung University, Taiwan, since 1991. His research interests include digital image processing, optical information processing, and information theory, and he has published more than 20 refereed papers in these areas. He is the director of the Photonics Signal Processing Laboratory and a member of the Computer Vision and Image Processing Laboratory at National Chung Cheng University. Dr. Kuo received the Best Engineering Paper Award from the Computer Society of the ROC in 1990 and the Outstanding Academic Achievement Award from Michigan State University in 1987. He is a member of Phi Kappa Phi, Phi Beta Delta, IEEE, and SPIE.

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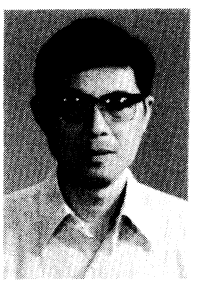

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