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Evolution of Photography**

Mark Osterman &
Grant B. Romer

**Major Themes and
Photographers of
the 20th Century**

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**Photographic Companies
and Applications**

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4th edition

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**Digital Imaging, Theory and Applications,
History, and Science**

Fourth Edition

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EDITOR-IN-CHIEF

Michael Peres is the Chairman of the Biomedical Photographic Communications department at the Rochester Institute of Technology where he is also a Professor in the School of Photographic Arts and Sciences. Professor Peres teaches and specializes in photomicrography as well as biomedical photography. He began teaching at RIT in 1986 and has authored numerous publications, delivered more than 100 oral papers, and conducted more than 35 imaging-related workshops all over the United States as well as in Sweden, Tanzania, the Netherlands, Germany, and Australia. He has been a member of Bio-Communications Association since 1978 and is currently a member of the Ophthalmic Photographer's Society. Peres serves as the Chair of the Lennart Nilsson Award Nominating Committee, is one of the coordinators of the annual R.I.T. Big Shot (www.rit.edu/bigshot) project and the R.I.T. Images from Science project (<http://images.rit.edu>). In 2003, Peres was awarded RIT's Eisenhart award given annually for outstanding teaching. Michael holds a Master's Degree in Instructional Technology and Bachelors degrees in Biology and Biomedical Photographic Communications.

SECTION EDITORS

Mark Osterman is process historian for the Advanced Residency Program in Photograph Conservation at the George Eastman House International Museum of Photography and Film. Mark is a recognized expert in the technical evolution of photography and leads a series of demonstrations and workshops in his area of expertise worldwide. Osterman frequently demonstrates the pre-photographic techniques, the earliest photosensitive methods of Niépce and Daguerre through gelatin emulsion for papers and plates.

A graduate from the Kansas City Art Institute, Osterman has taught studio and darkroom photography for 20 years at the George School in Bucks County, Pennsylvania prior to coming to the George Eastman House.

With his wife France Scully Osterman, Scully and Osterman are widely recognized as the foremost experts in the collodion process in all its variants. Through their research, writings, workshops and exhibitions the Ostermans have been the single most important influence in the current revival of collodion in fine art photography.

Grant B. Romer is currently the Director of the Advanced Residency Program in Photograph Conservation at the George Eastman House International Museum of Photography and Film. He has been active as an educator and advocate for the conservation of photographs and a specialist in the history and practice of the nineteenth century photography, particularly the daguerreotype. He has lectured extensively world-wide as well as having held numerous fellowships and visiting professorships.

A graduate of the Pratt Institute and the Rochester Institute of Technology, Romer joined the staff of the International Museum of Photography and Film at George Eastman House in 1978 when he became its Conservator. He has also served as curator of numerous exhibitions, most notably the permanent historical survey gallery of the museum, and recently, "Young America—The Daguerreotypes of Southworth and Hawes."

Romer is recognized, internationally, for his broad understanding of photography and unique perspectives on the importance and nature of the medium.

Nancy M. Stuart is the Executive Vice President and Provost of The Cleveland Institute of Art. From 1984–2002 she held various faculty and administrative positions including Associate Professor of Photography, Associate and Acting Director of the School of Photographic Arts and Sciences, as well as the Associate Dean of the College of Imaging Arts and Sciences at Rochester Institute of Technology. She also served as Applied Photography Department Chair. She began teaching photography in 1975 at Lansing Community College.

As an artist, she has addressed various social issues through her work. Her most recent published project, *DES Stories: Faces and Voices of People Exposed to Diethylstilbestrol* (VSW Press, 2001) explores the impact of accidental chemical exposure on the lives of forty individuals. One portrait from the book was chosen for the John Kobal Portrait Award Exhibit at the National Portrait Gallery in London.

Nancy completed her Ph.D. at the State University of New York at Buffalo in the Graduate School of Education. She lives with her husband David and two children, Sarah and Stuart, in Chagrin Falls, Ohio.

Franziska S. Frey is the McGhee Distinguished Professor in the School of Print Media at Rochester Institute of Technology. She currently teaches required courses and is involved in research projects in the Sloan Printing Industry Center at RIT and the Munsell Color Science Laboratory. Franziska is also a Faculty in the "Mellon Advanced Residency Program in Photograph Conservation" at the George Eastman House, International Museum of Photography. Franziska Frey received her Ph.D. degree in Natural Sciences (Concentration: Imaging Science) from the Swiss Federal Institute of Technology in Zurich, Switzerland in 1994. Before joining the faculty of the School of Print Media, she has worked as a research scientist at the Image Permanence Institute at RIT. Her work has primarily focused on establishing guidelines for viewing, scanning, quality control, and archiving digital images. Franziska publishes, consults, and teaches in the U.S. and around the world on various issues related to establishing digital image databases and digital libraries. She is also involved in several international standards

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groups dealing with Technical Metadata and Digital Photography. Franziska is a VP on the board of the Society for Imaging Science and Technology (IS&T) and is actively involved in a number of the conferences IS&T is organizing.

J. Tomas Lopez is a Professor of Art and Art History as well as the Director of Photography/Digital Imaging at the University of Miami. Professor Lopez is nationally and internationally known for his large-scale digital prints ranging from underwater photography to politically charged flags. He has been showcased in over 100 group exhibitions and 25 solo exhibitions. His work is included in many permanent collections: The Smithsonian Institution, National Gallery of American Art, La Bibliothèque Nationale de France (Paris), The International Museum of Photography, and many museums, public, and private collections. He has been with the University of Miami since 1994 where he lives and works with his wife Carol. Professor Lopez has been a recipient of the Florida Individual Artist Grants program, the Cintas Foundation Fellowship, and the NEA Award in the Visual Arts.

David Malin has actively been involved in scientific photography since 1960, initially using optical and electron microscopes and later X-ray diffraction techniques to study very small objects. In 1975, Malin moved from the United Kingdom to join the Anglo-Australian Observatory in Sydney, Australia as its photographic scientist, where he developed new ways of extracting information from images of bigger and more distant objects. Some of this work including the development of three-color astronomical imaging techniques and 'malinization,' which allowed images to be produced that were unequalled at the time when glass plates were the primary imaging material in astronomy. These novel image-enhancement techniques

quickly led to the discovery of two new types of galaxies. Malin-Carter 'shell' galaxies have low contrast but large-scale features associated with otherwise normal galaxies, while in 1987 he discovered an extremely faint, uniquely massive 'proto-galaxy' which has since been named Malin-1. Malin's photographs have been widely published on the covers of hundreds of books and magazines, including *Life* and *National Geographic* and as a series of Australian postage stamps. They have also been appeared in international solo art exhibitions in Australia, Britain, China, France, Italy, India, and the U.S. David Malin is the recipient of numerous awards for his work including two Doctor of Science (Honoris Causa) degrees. He was awarded the Rodman Medal of the Royal Photographic Society in 1990 and was the recipient of the Lennart Nilsson Award in the year 2000. David is currently an adjunct professor of Scientific Photography at RMIT University as well as active in the publishing and licensing of astronomical images through his web site <http://www.davidmalin.com/index.html>.

Scott Williams teaches courses pertaining to the Imaging Material Sciences and Media Law. He received his B.S. in Biochemistry from Purdue University, and his Ph.D. in Physical Chemistry from Montana State University. Prior to joining the School of Print Media faculty, Dr. Williams had held academic appointments in the RIT School of Photographic Arts and Sciences, RIT Department of Chemistry, and the Department of Chemistry and Chemical Engineering at the South Dakota School of Mines and Technology. Dr. Williams actively conducts research in the area of ink and paper coating chemistry and formulation. He is the inventor of over 30 U.S. and International patents related to advanced photographic and digital imaging media.

Mission Statement

The Focal Encyclopedia of Photography, Fourth Edition, has been designed to be the definitive reference book for students, practitioners, and researchers of photography as well as digital imaging practitioners who work in business, industry, publishing, advertising, science, and the visual arts. This volume, a complete revision of the award-winning 1993 *Third Edition*, uses a completely new informational design sharing the ever-changing breadth of photographic topics with a special emphasis on digital imaging and contemporary issues. This *Encyclopedia* was created not to simply be another academic text, but rather to appeal to those with broad interests in photography seeking authoritative information about the myriad branches of photography and imaging and issues associated in this dynamic era when both film and digital technologies co-exist.

This *Encyclopedia* was produced by an international team of photographic and imaging experts with collaboration from the world-renown George Eastman House. The *Fourth Edition* contains comprehensive essays as well as numerous photographic reproductions sharing information where photography and imaging serve a primary role—ranging from the atomic to the cosmic.

The design of this book is intended to share a comprehensive selection of photographic topics in a single volume. The revision has been created to enable readers to have immediate and easy access to highly concise information written in a style that will be complimentary to the Internet.