

Special Issue Editorial: The SPIE Medical Imaging Symposium Celebrates 50 Years

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Fifty years! Happy anniversary to the SPIE Medical Imaging Symposium, which began with the conference on Application of Optical Instrumentation in Medicine (AOIM), held in Chicago, Illinois, in November 1972. This was the first dedicated SPIE Medical Imaging meeting. And so, we are celebrating a major milestone in the life of this vibrant and treasured SPIE meeting.

That first conference in 1972 was organized by William Zarnstorff, William Hendee, and Paul Carson, and timed to immediately follow that year's RSNA meeting. It was the product of a collaboration between SPIE and BRH, the Bureau of Radiological Health, through a relationship that began when then-SPIE Executive Director Joe Yaver reached out to Roger Schneider, the Director of the Division of Electronic Products in the Bureau of Radiological Health (BRH), seeking sponsorship for SPIE programs. The Bureau had just been given responsibility for regulating medical imaging systems, and that meant going beyond radiation safety and into the "benefit" side of the cost-benefit equation for these devices. This was uncharted territory for the Bureau, and Roger had begun to put together a laboratory for the study of image quality issues. Joe convinced Roger to go out to the SPIE annual meeting in San Diego, and soon he had gained a convert who began to funnel grant money to the Society for its medical imaging meetings.

Joe Yaver recalled, "An important turn in our fortune occurred when we met Dr. Roger Schneider, who was at that time the director of the Center for Devices and Radiological Health. He asked us if we would be interested in running a meeting on medical imaging that they would essentially support, because he thought SPIE was the group that could best attract the cross-disciplinary audience he wanted to bring together. We agreed and that was the beginning of the Medical Imaging meeting."

The relationship between SPIE and BRH endured for many years. SPIE developed and nurtured a Medical Imaging conference series that became a unique home for research presentations by academic, government, and industry authors dedicated to the science of medical imaging broadly and with a focus on image quality evaluation, topics of significant interest to BRH.

The 1972 meeting was attended by many of the scientists who would go on to be leaders in the medical imaging field. A perusal of the proceedings, Vol. 35, will find papers authored by Joel Gray, Kurt Rossman, David Goodenough, Samuel Dwyer, Robert (Bob) Wagner, Harrison (Harry) Barrett, and others. AOIM II through XIV continued from 1973 to 1986, usually conjoined with the annual meeting of the American Roentgen Ray Society (ARRS). BRH continued as a cosponsor and funder of the meeting for many years, and BRH imaging scientists participated in great numbers. In addition, to showcase the Bureau's imaging laboratory and to push the field in a more mathematically rigorous direction, BRH's Roger Schneider and Bob Wagner developed plans for a medical imaging meeting in the vicinity of the Washington DC area. Managed by SPIE, that meeting was held in Columbia, Maryland, in October 1974, and recorded as Medical X-Ray Photo-Optical Systems Evaluation: SPIE Volume 56. The author index reads like a who's who of the imaging field of the day.

In 1978 and 1979, the two-meeting series Recent & Future Developments in Medical Imaging was hosted in San Diego as part of the SPIE annual meeting and was co-sponsored by BRH. However, the primary SPIE venue for medical imaging research presentations and

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interactions remained the February conference. In 1984 Roger Schneider and Sam Dwyer became the conference organizers, and the medical imaging meeting joined with a more recent picture archiving, communication, and storage (PACS) meeting—but abandoned a direct connection with the clinical radiology community. In 1987, the meeting was renamed “Medical Imaging.”

The meeting has expanded considerably since those early days when it was a single-track conference, adding conference tracks in Image Processing, which eventually spawned a separate conference in Computer-Aided Diagnosis, as well as tracks in Informatics, Functional Imaging, Ultrasound, Perception and Technology Assessment, and most recently, Digital Pathology. The meeting has held steady at 9 conferences for a number of years. For the past 15 years, we have seen a steady 800–900 papers across those conferences.

Over these past five decades many of the major advances in medical imaging were first showcased and discussed at the SPIE Medical Imaging (MI) meeting. As the number of papers, presenters, attendees, and conference tracks increased, the meeting outgrew its longtime venue in Newport Beach, California, a mourned era for some old-timers! Excluding 2021 and 2022 (due to the COVID-19 pandemic), MI has consistently seen over 1000 attendees per meeting for the last 20 years. The conference has continued to maintain its reputation for spurring collaborations and the building of friendships that sustain across careers, with the meeting’s commitment to all-attendee sponsored luncheons, well-attended poster receptions, and evening workshops—all providing essential time and spaces for networking and relationship-building.

A unique part of SPIE MI are the lunchtimes. With the lunches included in the registration, attendees enjoy daily, meal-long face-to-face discussions; an opportunity for an attendee to strategically locate that one researcher who wrote that one particular book or paper and, by “happstance,” end up next to them at lunchtime, or an opportunity to meet seven new faces. MI has boasted around 35% student attendees for most of the past ten years, and the lunches have been an important part of their MI experience. Students were often told to not sit together with their same crowd but rather to randomly spread out at different tables to meet someone new.

In 2010, a Best Student Paper Award was established at the SPIE Medical Imaging Symposium in honor of Robert F. Wagner, the FDA researcher who had attended the first meeting in 1972 and almost every annual meeting since that time. Bob, as he was known, had been a leading light at the meeting so it was fitting that SPIE be the host for an endowed award created to honor his legacy after he passed away in 2008. More recently, SPIE created a society-level award, the H.H. Barrett Medical Imaging Award, named for Harrison H. Barrett, also an attendee at the 1972 meeting and a towering figure at the annual meetings ever after.

Interestingly, for a large number of the SPIE MI attendees, the meeting is simply referred to as “the SPIE meeting,” as though it is the only conference run by SPIE. For many attendees, this is indeed the only SPIE meeting of which they know. Each summer the time comes when members of our community consider what to submit to “next year’s SPIE meeting.” The conference has been a place where our community regularly gathers each February to discuss our research, have lunch all together, attend workshops, and renew friendships at the poster receptions. For some, it was only after becoming involved in SPIE at the organizational level (either as a committee member, SPIE Board member, or in the Presidential chain) that there was a realization that our SPIE meeting was just one universe inside of a much larger universe, and that our meeting was actually SPIE MI.

At the February 2022 SPIE meeting in San Diego, the 50th anniversary was celebrated with a panel of long-time SPIE attendees, many of whom were students 20 to 30 years ago and benefitted greatly from the likes of Bob Wagner and Harry Barrett. These anniversary celebrants fondly recalled memories and stories, bringing the audience nearly to tears.

In honor of this 50th anniversary of the first SPIE meeting in the series that has become known as the SPIE Medical Imaging Symposium, JMI created a special issue organized largely along the symposium’s conference tracks, with leaders from each conference community serving as authors and conference historians (see Table 1). Robert Nishikawa contributed a special piece on the most cited papers from the conference, those with high numbers of citations, and attendee favorites. We are also delighted to include a special photographic history organized and captioned by Ken Hanson, a long-time conference attendee and technical presenter who also supported SPIE as a meeting photographer.

Table 1 VOL. 9 NO. S1, Special Issue Celebrating 50 Years of SPIE Medical Imaging.

Title	Authors	DOI
Special Issue Editorial: The SPIE Medical Imaging Symposium Celebrates 50 Years	Kyle J. Myers, Maryellen L. Giger	10.1117/1.JMI.9.S1.S12200
SPIE Medical Imaging: Content within Context	Ehsan Samei	10.1117/1.JMI.9.S1.S12201
SPIE Medical Imaging 50th anniversary: history of the Image Perception, Observer Performance, and Technology Assessment Conference	Elizabeth A. Krupinski, Harold L. Kundel	10.1117/1.JMI.9.S1.012202
History of the SPIE Medical Imaging Digital Pathology Conference	Anant Madabhushi, Metin N. Gurcan	10.1117/1.JMI.9.S1.012203
Brief photographic history of the SPIE medical imaging meetings	Kenneth M. Hanson	10.1117/1.JMI.9.S1.012204
Science and practice of imaging physics through 50 years of SPIE Medical Imaging conferences	Adam S. Wang, Ian A. Cunningham, Mats Danielsson, Rebecca Fahrig, Thomas Flohr, Christoph Hoeschen, Frederic Noo, John M. Sabol, Jeffrey H. Siewerdsen, Anders Tingberg, John I. Yorkston, Wei Zhao, Ehsan Samei	10.1117/1.JMI.9.S1.012205
SPIE Medical Imaging 50th anniversary: historical review of the Image-Guided Procedures, Robotic Interventions, and Modeling conference	Jeffrey H. Siewerdsen, Cristian A. Linte	10.1117/1.JMI.9.S1.012206
Fifty years of SPIE Medical Imaging proceedings papers	Robert M. Nishikawa, Thomas M. Deserno, Anant Madabhushi, Elizabeth A. Krupinski, Ronald M. Summers, Christoph Hoeschen, Claudia R. Mello-Thoms, Kyle J. Myers, Matthew A. Kupinski, Jeffrey H. Siewerdsen	10.1117/1.JMI.9.S1.012207
SPIE Computer-Aided Diagnosis conference anniversary review	Ronald M. Summers, Maryellen L. Giger	10.1117/1.JMI.9.S1.012208
Brief history of Image Processing at SPIE Medical Imaging	Murray H. Loew	10.1117/1.JMI.9.S1.S12209
SPIE Medical Imaging 50th anniversary: history of the Picture Archiving and Communication Systems conference	Katherine P. Andriole	10.1117/1.JMI.9.S1.S12210

We appreciate and congratulate all the authors contributing to this special issue. We hope these papers and this editorial help the readers acquire a sense of the history, scope, and the special place the SPIE Medical Imaging Symposium has held in the hearts of so many of its attendees over the years, the important role it has played in the advancement of the field of

medical imaging, and the significance of its impact on the careers of countless scientists. We look forward to the next fifty years, confident in the sustained prominence of this meeting and the vibrancy of the community it serves. And, we offer our deepest gratitude to the staff of SPIE who have helped to make it so. We dedicate this special issue to the founders of the conference, the early leaders and shapers of the conference, and our mentors who prioritized this meeting for both themselves and their students, ensuring that it was a major part of our career experience.