



Book review

## “Emerging Technologies in Brachytherapy”

The book “Emerging Technologies in Brachytherapy” (ISBN 9781498736527; hardback) was written by many scientists from different countries and edited by: William Y. Song, Kari Tanderup, Bradley R. Pieters, experienced professionals in the field of brachytherapy.

This book covers almost all brachytherapy indications, describing techniques and results as well as tips and tricks. The use of color pictures further enhances this excellent guide for those interested in brachytherapy, especially in emerging new technologies.

With 5 sections, 31 chapters by 102 authors who are authorities in their area of specialization, the book is divided into five sections. Section I includes twelve chapters on physics of brachytherapy, discusses basic definitions of sources and loading technologies and applicators. These chapters give detailed information how to reconstruct applicators, to calculate dose, and to optimize the dose distribution. In another chapter, readers are informed about image-guided treatment and processing in planning agenda, real-time dosimetry, and quality assurance technologies. The newest developments in robotics are also presented. Section II contains guidelines of modern imaging for brachytherapy. All modern imaging techniques used nowadays in clinical practice are discussed such as optical imaging and navigation, X-ray imaging, computed tomography, magnetic resonance imaging, and positron emission tomography. All techniques are used for treatment verification. The most interesting chapter provide a glimpse on optical molecular imaging and its potential in the diagnosis and treatment of cancer.

Organization of Brachytherapy Units depends on country, tradition, and experience. In Section III, brachytherapy suites (departments) from Vienna, Utrecht, Erlangen, Montreal, Toronto, Mumbai, and Dakar are presented. This section can be especially useful for planning new facilities all over the World.

Section IV contains 3 important chapters comparing different radiotherapy modalities. In many centers, treatment of cancer is accomplished by external beam radiation therapy and brachytherapy; however, the use of appropriate beam therapy is increasing. Furthermore, an important issue addresses the values and costs of treatment.

Section V, the last section of the book, is written by the industry, giving their viewpoint for the next few years.

This book is not a comprehensive review of technologies related to brachytherapy planning and delivery. It provides new and valuable information that will most likely benefit students and trainees in radiotherapy. It is a welcome addition to many oncologists' reference libraries.

### Editor's bio

**Dr. William Y. Song** is the Head of the Department of Medical Physics at the Odette Cancer Centre, Sunnybrook Health Sciences Centre, in Toronto, Canada. This is one of the largest medical physics units in the World, with over 50 members of staff. Along with a busy external beam radiotherapy program, the center sees close to 600 brachytherapy patients a year, making it the busiest program in Canada. Since joining the center in 2014, he has been an Associate



Professor in the Department of Radiation Oncology, Adjunct Professor in the Institute of Medical Sciences, Institute of Biomaterials and Biomedical Engineering, and Department of Mechanical and Industrial Engineering at the University of Toronto. He is also an Adjunct Professor in the Department of Physics at the Ryerson University, Toronto, Canada. He received his PhD degree in 2006 at the University of Western Ontario, London, Canada, on the topic of image-guided treatment approaches for prostate cancer. Since then, he has pursued research in the field of image guidance systems, 4D motion management technologies, and brachytherapy, resulting in over 50 peer-reviewed publications and more than 130 conference abstracts. Along the way, he became a fully certified medical physicist (American Board of Radiology, 2010), directly supervising more than twenty MSc and PhD graduate students, an ad hoc reviewer for over 20 research journals. He is a member of the Board of Associate Editors for the Journal of Medical Physics.



**Dr. Kari Tanderup** is Professor at Department of Oncology, Aarhus University Hospital in Aarhus, Denmark. She was educated from Aarhus University with a master's degree in physics and math in 1997. In 2008, she received her PhD degree with a thesis on brachytherapy in cervix cancer. Furthermore, since 2011, she has been appointed as visiting professor at Medical University of Vienna. At Aarhus University Hospital, Kari Tanderup chairs a research group working with brachytherapy and MR image guidance. Her main research interests are MRI-guided cervix and prostate cancer, clinical studies, and in vivo dosimetry. Within these topics, she has authored over 90 papers and has supervised more than ten PhD students. Furthermore, she was a committee member for the ICRU Report 89 on brachytherapy in cervix cancer, and she is Associate Senior Editor for International Journal of Radiation Oncology, Biology and Physics. Kari Tanderup is actively contributing to committee and task group work in ESTRO and is course director in the ESTRO school. She is chairing the GEC ESTRO gyn network, which represents the most active core of European academic centers within gynecological brachytherapy, and embraces members from Central/ Eastern Europe, India, Canada, and USA.



**Dr. Bradley R. Pieters, MD, PhD** is the Head of the Brachytherapy department at the Academic Medical Center in Amsterdam, The Netherlands. The AMC has a focus on brachytherapy, hyperthermia, and image-guided radiotherapy. He was trained as radiation oncologist at the Radboud University Hospital in Nijmegen, The Netherlands. Because of his interest in brachytherapy, he followed at the end of the residency a brachytherapy fellowship at the Daniel den Hoed Cancer Centre in Rotterdam and the Institute Gustave Roussy in Villejuif, France. Dr. Pieters received his MSc in epidemiology in 2006. In 2010, he received his PhD degree at the University of Amsterdam after defending his thesis "Pulsed-dose rate brachytherapy in prostate cancer". In his role as leader of the brachytherapy research group, he supervises PhD students and contributed to more than 40 peer-reviewed papers, with the majority concerning brachytherapy topics. He is one of the co-editors of the "Journal of Contemporary Brachytherapy" and is a member of the Editorial Board of Brachytherapy. For the GEC-ESTRO (Group Européen de Curiethérapie-European Society for Radiotherapy and Oncology), he contributes as course director for the Comprehensive and Practical Brachytherapy course and is a member of the GEC-ESTRO Committee.

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