
Contents

1 Principles and Roots of Neutron Capture Therapy	1
Wolfgang A.G. Sauerwein	
Part I Neutron Sources	
2 Fission Reactor-Based Irradiation Facilities for Neutron Capture Therapy	19
Otto K. Harling and Kent J. Riley	
3 Accelerator-Based BNCT	41
Andres J. Kreiner	
4 Compact Neutron Generator for BNCT	55
Ka-Ngo Leung	
5 Californium-252 as a Neutron Source for BNCT	69
Albert Miller	
Part II Boron	
6 Boron Chemistry	77
Luigi Panza and Davide Prosperi	
7 Boron Compounds: New Candidates for Boron Carriers in BNCT.	99
Hiroyuki Nakamura and Mitsunori Kirihata	
8 Drugs for BNCT: BSH and BPA.	117
Wolfgang A.G. Sauerwein, Pierre M. Bet, and Andrea Wittig	
Part III Analysis and Imaging	
9 Boron Analysis and Boron Imaging in BNCT.	163
Andrea Wittig and Wolfgang A.G. Sauerwein	
10 Proteomic Investigations for Boron Neutron Capture Therapy . . .	189
Pier Luigi Mauri and Fabrizio Basilico	

11	Analysis and Imaging: PET	201
	Tadashi Nariai and Kiichi Ishiwata	
12	Boron Imaging: Localized Quantitative Detection and Imaging of Boron by Magnetic Resonance	213
	Peter Bendel	
Part IV Physics		
13	Physical Dosimetry and Spectral Characterization of Neutron Sources for Neutron Capture Therapy	227
	David W. Nigg	
14	The Clinical Commissioning of Beams for Neutron Capture Therapy	259
	Per Munck af Rosenschöld	
15	Prescribing, Recording and Reporting of BNCT	277
	Jürgen Rassow and Wolfgang A.G. Sauerwein	
16	Treatment Planning	287
	W.S. Kiger III and Hiroaki Kumada	
Part V Biology		
17	Boron Neutron Capture Therapy: Application of Radiobiological Principles.	329
	John W. Hopewell, Gerard M. Morris, Amanda E. Schwint, and Jeffrey A. Coderre	
18	Tolerance of Healthy Tissues and Ideal Radiation Dose on BNCT	359
	Yoshinobu Nakagawa and Teruyoshi Kageji	
Part VI Clinical Applications		
19	Clinical Trials in BNCT: A Challenging Task	369
	Andrea Wittig and Wolfgang A.G. Sauerwein	
20	External Beam BNCT for Glioblastoma Multiforme	377
	Tetsuya Yamamoto and Akira Matsumura	
21	Clinical Results of Sodium Borocaptate (BSH)-Based Intraoperative Boron Neutron Capture Therapy (IO-BNCT)	389
	Teruyoshi Kageji, Yoshinobu Nakagawa, and Hiroaki Kumada	
22	Boron Neutron Capture Therapy for Malignant Meningiomas ...	399
	Shinji Kawabata and Shin-Ichi Miyatake	

23 Feasibility for Intramedullary Spinal Glioma	407
Kei Nakai and Akira Matsumura	
24 BNCT for Advanced or Recurrent Head and Neck Cancer.	417
Teruhito Aihara and Norimasa Morita	
25 Studies on the Possible Application of BNCT to Thyroid Cancer	425
Mario A. Pisarev, Maria A. Dagrosa, and Guillermo J. Juvenal	
26 Malignant Melanoma.	433
Junichi Hiratsuka and Hiroshi Fukuda	
27 Application of Neutron Capture Therapy for Locally Recurrent Breast Cancer.	449
Hironobu Yanagie	
28 Liver Metastases.	461
A. Zonta, L. Roveda, and S. Altieri	
29 Boron Neutron Capture Therapy for Children with Malignant Brain Tumors	505
Yoshinobu Nakagawa and Teruyoshi Kageji	
30 Prevention of Vascular Restenosis After Vascular Angioplasty.	513
Wataro Tsuruta, Tetsuya Yamamoto, and Akira Matsumura	
31 Boron Neutron Capture Synovectomy	521
Jacquelyn C. Yanch	
 Part VII Organizational Aspects and Management	
32 Managerial Aspects of BNCT at a Nuclear Research Reactor	533
Wolfgang A.G. Sauerwein and Ray Moss	
Index	543

Neutron Capture Therapy

Principles and Applications

Sauerwein, W.; Wittig, A.; Moss, R.; Nakagawa, Y. (Eds.)

2012, X, 554 p., Hardcover

ISBN: 978-3-642-31333-2