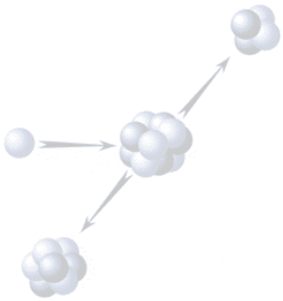
INTERNATIONAL SYMPOSIUM ON

BORON NEUTRON CAPTURE THERAPY

July 7 - 9, 2004, Novosibirsk, Russia



Editor

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PREFACE

Early in the 90s, Japanese scientists showed that boron neutron capture therapy (BNCT) allows treating brain glioblastoma multiforme and melanoma, that are resistant to other methods of treatment. Glioblastoma multiforme afflicts approximately one of 20,000 people every year. The disease is always fatal, usually within six months of onset. Surgery and conventional radiation therapies may prolong life for as much as a year but do not stop the spread of tumors throughout the brain. This event in the early 90s gave a good intensification in study boron neutron capture therapy. In 1994 BNCT irradiation was re-initiated in the US. Glioblastoma multiforme patients have been treated at Massachusetts Institute of Technology Research Reactor and Brookhaven Medical Research Reactor. In 1997, clinical trials began in Petten, the Netherlands, as a result of joint effort of the European Community. In June 1999 clinical trials began in Finland, in 2000 – in Czesh Republic, 2002 – Sweden and Italy, 2003 – Argentina, in the near future clinical testing in Australia and Korea will be started. All these studies are conducted at specially constructed or adapted nuclear reactors. Progress in BNCT at clinical trials at reactors and prospects of the technique led to intensive discussion of development and construction of neutron source based on compact and inexpensive accelerator available for every oncologic hospital. Now, works are carried out at accelerators available at the number of scientific centers, and pilot accelerator based source of epithermal neutrons is under construction at the Budker Institute of Nuclear Physics.

The International Symposium on Boron Neutron Capture Therapy was held in Novosibirsk, July 7-9, 2004. It was organized by the Budker Institute of Nuclear Physics, Novosibirsk, with support of the International Science and Technology Center.

The main objectives of the Symposium were to serve as a review of the progress in the development of accelerators for BNCT irradiation systems, as well as review clinical aspects. The program of Symposium included review lections, invited papers, contributed papers, round-table discussion, and ISTC seminar. The main topics of the papers were following: accelerator based neutron source; medical physics; treatment planning; clinical aspects. This meeting allowed to coordinate efforts of Russian investigating groups, some of which are supported by International Science and Technology Center.

S. Taskaev

Editor

Novosibirsk, July 21, 2004

Program Schedule

Wednesday, July 7, 2004

8:00 - 9:00	**Registration**	
9:00 - 9:10	**Opening of the Symposium**	
9:10 - 11:00	**ISTC seminar**	
9:10	E. Kruglyakov	Plasma Neutron Source Based on Gas Dynamic Trap (ISTC projects # 050 and 492)
9:30	I. Koop	Electron-Positron Storage Ring (ISTC project # 1928)
9:50	P. Logachev	Accelerator Ion Source (ISTC project # 2257)
10:10	M. Tiunov	High-Efficiency, High-Power Accelerator Development (ISTC project # 2250)
10:30	G. Malyshkin	Development of a Treatment Planning System for the Snezhinsk Neutron Therapy Center (ISTC project # 2145)
10:50	A. Ivanov	Accelerator Based Neutron Source for Boron Neutron Capture Therapy (ISTC projects # 1484 and 2569)
11:10 - 11:30	**coffee break**	
11:30 - 13:00	**Poster section**	
13:00 - 14:00	**Lunch**	
14:30 - 22:00	**Ship tour and barbecue**	

Thursday, July 8, 2004

10:20 - 13:00		
10:20	Yu. Belchenko	Study of cw negative ion source for BNCT tandem accelerator
10:35	A. Kudryavtsev	Channel of beam transporting
10:50	I. Kandaurov	Test experiments for ion beam injection at the prototype of electrostatic tandem accelerator
11:15 - 11:35	**coffee break**	
11:35	I. Sorokin	Status of high-current tandem accelerator for the neutron therapy facility
11:50	P. Nemytov	High voltage rectifier for accelerator based neutron source
12:05	V. Davydenko	Stripping target for 10 mA 1 MeV negative ion beam
12:20	S. Taskaev	Optimization of lithium target for epithermal neutrons generation
12:35	T. Vsevolozhskaya	Temperature regime in neutron production target for BNCT
13:00 - 14:00	**Lunch**	
14:00 - 18:00		
14:00	V. Kanygin	Recent methods of brain malignant tumor diagnostics and therapy
14:25	A. Manannikov	Radiotherapy in Russia
14:45	I. Ostanina	Recent aspects of medicamental treatment of tumor
15:00	V. Lisin	Fast neutrons therapy
15:20	V. Bregadze	Synthesis of boronated chemicals for BNCT
15:55 - 16:15	**coffee break**	
16:15	V. Kononov	Accelerator based neutron source for medicine
16:35	O. Kononov	Accelerator based epithermal neutron source for NCT
16:50	G. Krainov	High frequency compact generator of accelerating voltage on 500 kV, 10 kW
17:05	G. Dimov	Dc tandem surface-plasma source of H^- with current up to 100 mA
17:25	I. Sheino	Neutron capture therapy at the MEPhI reactor
19:00 - 22:00	**Symposium dinner**	

Friday, July 9, 2004

9:00 - 11:10	**Round-table discussion on BNCT**	
11:10 - 11:30	**coffee break**	
11:30 - 12:30		
11:30	T. Kobayashi	Small accelerators for the next generation of BNCT irradiation systems
11:50	A. Ivanov	Accelerator based neutron source for boron neutron capture therapy
12:10	I. Gulidov	Fast reactor neutrons in the treatment of malignancies and perspectives of NCT and NCT enhanced fast neutron therapy in Obninsk, Russia
12:30 - 12:50	**Symposium closing**	
13:00 - 14:00	**Lunch**	
14:00 - 16:00	**Excursions to experimental facilities of Budker Institute of Nuclear Physics**	
16:00 - 19:00	**Optional excursions to Novosibirsk and Akademgorodok**	

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