Introduction

Positron Emission Tomography (PET) is becoming an increasingly important tool for studying physiological, biochemical and pharmacological functions at a molecular level in living man, whether in health or in disease. More than one hundred and fifty groups have been established worldwide in the last two decades, about forty of which are in Europe. The general goal of Positron Emission Tomography clearly is to contribute to a better quality of life by improving health, and a distinctive feature is to strengthen collaboration in order to achieve this goal.

Radiochemical methodology constitutes the most important base for successful functioning of a PET group in the routine production and development of new radiopharmaceuticals. The development of a new radiopharmaceuticals is long and problematic, and involves several stages. The production of the radioactive labelling agent is already connected to the choice of the target. Use of the best targets is mandatory for achieving optimal production yield and radionuclidic purity. Many details of targetry have been specified in order to obtain the desired chemical form of the radionuclide in high total activity and in high specific radioactivity. In-target chemistry during irradiation plays a major role.

The main objective of 7th International Workshop on Targetry and Target Chemistry is to increase the scientific efficiency of the relevant research and development areas in the gradual coordination at community level following mobilization of the available research potential of individual PET programs, and also their economic efficiency through sharing of tasks and strengthening the joint use of available research resources. It was therefore appropriate that users of cyclotrons and producers of important radionuclides could describe and discuss their work and problems at their own meeting. It is important to improve scientific and technological knowledge in targetry research and promote its efficient transfer into practical application of the production of short-lived radionuclides for PET research.

The following Proceedings assemble contributions presented at the 7th Workshop on Targetry and Target Chemistry held in Heidelberg, Germany, June 8 – 11, 1997. In October 1985 we held the first Workshop in Heidelberg, and two years later also the Second Workshop on Targetry and Target Chemistry. We had set out to address the problems associated with the production of cyclotron radionuclides for the use in biology and medicine. The agenda was planned to discuss and try to answer the questions related to the construction materials used in production targets, the transport and interaction of particle beams, irradiation conditions, target chemistry and the problems associated with technical design of high pressure targets which enable highest yields of the product in shortest time. The 7th Workshop on Targetry and Target Chemistry, which was attended by about 180 individuals from numerous countries was dedicated to similar problems as described above, and we hoped to be able to extract the maximum effect for this important and costly field of work.

As the Director of the Deutsches Krebsforschungszentrum, Prof. Harald zur Hausen, stressed in his welcoming address, cooperation plays the fundamental role in further developments in cyclotron radionuclide production and targetry for PET research. For the first time, the Organizing Committee invited the President of the INTDS, William Lozowski. This enabled two target-oriented organisations to know the activities of the other and notably to learn about some problems and techniques of preparation of targets for nuclear studies.

At the end of the meeting it was suggested that the next Workshop be held together with the 13th International Symposium on Radiopharmaceutical Chemistry and the 11th International Symposium on Radiopharmacology in St. Louis, USA, in June 1999.

In conclusion I would like to thank all those who participated in WTTC97, and not least of all those whose untiring work behind the scenes made it possible.

We are indebted to the members of the WTTC97 Local Organizing Committee for their attentive, timely activities. One member of this committee, Stefan Zeisler, is a special hero to us because he undertook the adventure of editing all submitted papers and oral contributions. Without this tremendous effort this book could not have been published.

I am looking forward to seeing you again in St. Louis in June 1999 !

Frank Helus
Chairman, Local Organizing Committee
January 1998

Editorial

In the Proceedings of this Seventh Workshop on Targetry and Target Chemistry we tried to include as much of the discussions and oral presentations as possible. Many brief talks containing valuable information had only been given orally and with little formal preparation, so no abstracts or slides were available and we just transcribed the tape recordings to the best of our knowledge. These ‘no-abstract talks‘ also appear in the Table of Contents with the comment ‘Talk only‘. In the text, we gave the name of the presenting author and a short headline (bold type).

We wish to thank those chairpersons who helped edit the transcripts of their session. We are well aware that the transcripts still contain errors, despite all efforts to be accurate. Most of them are due to bad recording, particularly when people asking questions or commenting did not use a microphone. Technical problems with the tapes caused several omissions. We apologize in advance to those who have been misquoted and accept all responsibility.
In the transcripts of the discussions following the talks, speakers from the audience have been identified where possible. Questions are labelled ‘Q‘, comments ‘C‘ and answers ‘A‘. Answers were usually given by the presenting author.

Stefan Zeisler
June 1998