

ACKNOWLEDGEMENTS

The Organizing Committee wishes to acknowledge and thank the following organizations for their enthusiasm and financial support which have helped make this Workshop possible.

AccSys Technology, Inc. (USA)
CTI Cyclotron Systems Inc. (USA)
EBCO Technologies (CANADA)
General Electric (CANADA)
Ion Beam Applications sa. IBA (BELGIUM)
National Electrostatics (USA)
NKK Corp. (JAPAN)
Nordion Int. (CANADA)
Orbit (USA)
Scanditronix (SWEDEN/USA)
Science Applications International Corp. (USA)
Science Research Lab. Inc. (USA)
TRIUMF (CANADA)
Van Gahlen (USA)

We wish to also thank the Natural Sciences and Engineering Research Council of Canada for their support through the University-Industry Program.

We are indebted to the organizational skills of Diane Mellor for providing an efficient and hospitable environment for the workshop, and to Leila Laakso who pulled the writings of many into these proceedings.

ORGANIZING COMMITTEE

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Introduction

By way of an introduction to this Targetry Workshop, a brief history of the origin of the workshops will be given. This year it is even more important to share the ideas behind these workshops as the number of new centres producing radionuclides continues to increase and, accordingly, the number of scientists involved in this delicate science/art also increases.

The idea to have a workshop originated when Bruce Wieland and I met at an accelerator meeting in Denton, Texas in the fall of 1978. In the subsequent discussions, we recognized that, for the most part, the so-called isotope producers worked in isolation and that the manner in which radioisotopes are produced was primarily folklore. We felt that if a wider group of users could be assembled to share their experiences, it would be possible to establish a more scientific approach to the design of radioisotope production targets for the biosciences.

At the end of the Symposium on Radiopharmaceutical Chemistry in Tokyo in 1984 a small group gathered to discuss the possibility of holding a targetry workshop. The workshop became a reality when Frank Helus agreed to host the first of these events at the DKFZ the following year.

In taking on this task, Frank assumed a great deal of risk as well as the onerous responsibility of organizing an international meeting. Organizing a new meeting has all of the uncertainties associated with gaining support, establishing the scientific program and achieving an optimum size for maximum interaction. Nonetheless, Frank proceeded to pull together a meeting in the fall of 1985 that many consider to be one of the most useful and memorable meetings they had ever attended.

Based on the success of this first meeting the participants agreed that a second such meeting was in store. Again Frank rose to the task and organized another workshop for two years hence (1987). Heidelberg, to the radioisotope community, was becoming synonymous with the Targetry Workshops.

However, after organizing two international workshops Frank felt that another group should have the opportunity of organizing the next workshop. Thus we gathered in Vancouver for the Third Workshop on Targetry and Target Chemistry.

In looking at the science that was the driving force in these workshops, one of the major considerations was the exploration of producing the positron emitting radioisotopes with a proton only machine. It was at that meeting in Denton where Bruce and I met that each of us presented a paper on the production of proton induced reactions, in particular the production of ^{18}F from enriched ^{18}O . The work I presented was the effort of many at Brookhaven and Al Wolf generously allowed me to represent the group. Bruce coauthored his paper with Bob Highfill and Paul King from Oak Ridge.

If one were to characterize that first workshop one would have to say it was a back to basics approach. Since much of what is done in this field is a mixture of science, art and good and bad fortune, the participants grappled with each step in the production of a radioisotope from beam transport and target windows to scheduling. An effort was made to define the parameters that were essential and to identify those that needed further research. Probably the most important conclusion of this workshop was the general agreement that a proton only machine could, in principle, meet the needs of most radioisotope producers. The particular design, including energy and beam current, would depend upon the requirements of the particular facility. Of course, there was general agreement that a multi-particle machine is essential for a widely based research program.

The primary focus of the second workshop was the exploration of performing our task in a remote or automated fashion. As was the intention from the beginning, this meeting was a "nuts and bolts"

approach to defining and understanding what is required to make a system work. The frank and open discussions allowed many to leave the meeting with new ideas on how to improve their systems back home.

In looking back at the third workshop, as I prepare these proceedings, there are several features that stand out as noteworthy. The first is the clearer understanding of how to produce high quality ^{15}O and ^{11}C . There is now a better idea as to which parameters have to be carefully monitored in order to successfully produce either of these radionuclides.

The second important event coming out of this meeting is the exciting prospect of a new generation of accelerators designed for radioisotope production. For the first time accelerators are being designed for radioisotope production by making use of high beam current to compensate for the low cross sections at the designed low energies. While the design of targets for these machines will be extremely difficult, these new prospects will bring chemist into close contact with the accelerator community as they try to overcome many of the material science problems these machines create, for example ultra-thin target windows and cryogenic targets. These developments will be followed closely.

And finally, the reports from the labs have always provided an interesting and helpful insight into what is happening around the world in radioisotope production. There is always some little trick that makes a system work that much better which is passed on to the rest of the community. The willingness to share these experiences with your colleagues has made these meetings as successful as they are.

One final note, I believe that these meetings have worked because the participants have been willing to share and listen. Unless we continue to exercise a willingness to get our hands dirty and grapple with the thorny issues associated with our trade, the value of these meetings will have disappeared. Thus it is with confidence that I can say that these proceedings are simply the preface to what we will learn in the following workshops. Thank you friends and colleagues.

Thomas J. Ruth
December 1990

