



Douglas Cline

## **John R. Huizenga and the Nuclear Structure Research Laboratory**

On behalf of the Department of Physics and Astronomy I wish to welcome all of you to the Symposium. It is a real pleasure to see here today many former members of the Nuclear Structure Research Laboratory.

I especially welcome John Huizenga back to Rochester and thank him for allowing us to participate in this celebration of this truly "royal" 85<sup>th</sup> birthday.

It was a real coup for the Departments of Chemistry and Physics, and especially the Nuclear Structure Research Laboratory, (NSRL) when John agreed to join us in 1967. We owe a debt of gratitude to Marshall Blann who played a key role in getting John to come to Rochester.

As a nuclear physics faculty member before the NSRL, let me put in context what nuclear science was like at Rochester before John joined us. In 1963 Parker Alford, Harry Fulbright, Alex Bilaniuk, and Marshall Blann were the faculty in experimental nuclear science at Rochester; I was a postdoc with Parker Alford. Bruce French and Dan Koltun provided outstanding theoretical support in nuclear science. The experimental nuclear science at Rochester was based on the 27" variable-energy cyclotron that was housed in the basement of Bausch and Lomb. This accelerator was originally built at Rochester by Sid Barnes and subsequently it was upgraded to variable energy by Harry Fulbright. This accelerator facility, commissioned in 1936, was one of the earliest cyclotron facilities in the world, designed immediately after Lawrence invented the concept of the cyclotron. The Rochester cyclotron had a distinguished record in the field but by the early 1960s the accelerator facility was no longer competitive.

The nuclear science group was overjoyed when the National Science Foundation funded construction of the Nuclear Structure Research Laboratory. This new facility on the south campus housed the Emperor Tandem Accelerator, then the highest voltage electrostatic accelerator design in the world. Harry Gove joined as Lab director in 1963 and construction commenced leading to commissioning of the research program in Fall 1966. John came to Rochester the following year. He and his group immediately became an integral part of the NSRL which they continued to be throughout the life of the facility, during the later years under Udo's direction. The Nuclear Structure Research Laboratory was an exciting international center of nuclear science in the initial years after commissioning.

This symposium will address some of the important scientific contributions made by John and colleagues while he was at Rochester so I will refrain from discussing the science. However, I do want to give one example of John's skill at identifying and pursuing new research opportunities at the forefront of the field. In 1966 the combination of the tandem plus the new Enge Split-pole double-focusing magnetic

spectrograph facility provided Rochester with a unique capability to probe single-particle structure of nuclei. Many of us were exploiting this unique capability to study shell structure of nuclei. John used his access to actinide nuclear targets plus this facility to pioneer a study of the structure of actinide nuclei. Today the study of nuclear structure of actinide nuclei is a vibrant and exciting field that exploits instrumentation that is orders of magnitude more powerful. But the science is the same as was pioneered by John four decades ago.

There is an interesting similarity between the history of the Rochester 27" cyclotron and the NSRL tandem Van de Graaff accelerators; that is the pre-John and post-John eras at Rochester. In 1965, after 29 years of use at Rochester, the 27" cyclotron was shipped to India where it still is operating 70 years after it was first commissioned. I do not know of any accelerator facility that has had such longevity. However, some claim that this cyclotron may have retarded nuclear science in India by several decades. In the post-John era the tandem accelerator also had a very distinguished and productive 29 year lifetime at Rochester. John played an important role in this success. The tandem then was moved to Brookhaven where now it still is playing an important role in nuclear science by serving as one of two heavy-ion injectors to the Brookhaven Relativistic Heavy Ion Collider. RHIC is a major facility in nuclear science in this country that is being used by international collaborations, including Frank Wolfs, to probe what happened the first few microseconds after the Big Bang. Thus the Rochester tandem now has made major contributions to nuclear science for 40 years since commissioned in 1966, emulating the longevity and importance of the Rochester 27" cyclotron.

John, on behalf of your colleagues in the Department of Physics and Astronomy I want to thank you for the tremendous contributions that you made to the Department, the Nuclear Structure Research Laboratory, and to nuclear science while you were at Rochester. We all wish you a Happy 85<sup>th</sup> Birthday.