Chemical Engineering and Nuclear Technology at Oak Ridge National Laboratory

During World War II the key Manhattan Project sites were Oak Ridge (Uranium Processing and Pu Processing), Hanford (Pu Production) and Los Alamos (Weapons Development). Oak Ridge was the site for the Gaseous Diffusion Enrichment process, the Electromechanical enrichment process, and the large scale Graphite Reactor and the reprocessing cells that accompanied this in Building 3019. Oak Ridge took the Stagg Field Physics experiment and developed the chemical engineering process that was used as the plan for the Hanford work. After the work Oak Ridge has continued in excellence in Chemical Engineering applications, including operations of several reactors and different flowsheets. Since Oak Ridge is the oldest DOE site working in this area, we also have a strong waste legacy, and have done a lot to treat the nuclear wastes from the early days. Currently ORNL is working with the other labs on the Coupled End to End Chemical Separations activities that will help define the future of nuclear reprocessing and Nuclear Chemical Engineering. This talk will discuss the three activities Oak Ridge was built to address, history of these facilities, how we solved our nuclear waste issues, and the direction Nuclear Chemical Engineering is taking now.