

After a brief illness, Professor Carlton W. Dence passed away in Hendersonville, NC on January 18, 2006. He was 80 years old.

He was a 1947 graduate of Syracuse University, majoring in chemistry. Dr. Dence received his MS degree from SUNY College of Environmental Science and Forestry (SUNY-ESF) in 1949 then worked as an analytical chemist with Allied Chemical and Dye Corporation from 1949 to 1951. He rejoined SUNY-ESF as a research assistant in December 1951.

A few years later he enrolled in the doctoral program and received his Ph.D under the supervision of Dr. Kyosti V. Sarkanen in 1959. His doctoral dissertation, "A Proposed Mechanism for the Acidic Chlorination of Softwood Lignin", was quite timely because the pulp and paper industry was starting to hear concerns about the use of Cl_2 from the scientific community.

Immediately upon graduation he joined the Faculty of Paper Science and Engineering (PSE) at SUNY-ESF. The publication that was probably his first as a faculty member was "Studies on Oxidative Delignification Mechanisms" (Dence et al., 1962). That paper is significant because it was one of the early publications advocating oxidative ring opening of phenolic nuclei as a favorable reaction with a wide range of oxidants. Chlorine dioxide was the principal oxidant in the investigation and the authors advocated its superiority over chlorine in a subtle manner.

Dr. Dence was never comfortable with his earned reputation as an expert on the reactions of chlorine. The industry encouraged his research on the optimization of pulp chlorination but would be "diplomatic" when dealing with his concerns about the potentially harmful effects of chlorination spent liquors.

By the late 1960s, Dr. Dence had the necessary stature and the trust of the pulp and paper industry to start using their funds to perform research and publish data on the characterization of spent chlorination liquors (Dence and Ota, 1970). Although the language was subtle it is clear that he had grave concerns about the possible adverse effects of chloro-organics on aquatic life. He soon started receiving funding from the Environmental Protection Agency (EPA) and the Water Pollution Control Administration.

The late 1960s and early 1970s was a productive period for Dr. Dence, during which he wrote an excellent review on halogenation and nitration (Dence, 1971). That chapter may be his most cited reference outside of the pulp, paper and wood chemistry community.

He published results on the alkaline extraction stage performed under nitrogen, air and oxygen atmospheres (Kempf and Dence, 1970). This research evolved into the Eo stage which is now standard in the bleach plant of chemical pulp mills. In addition, he started down a new path investigating oxidative ring opening (delignification) with a new oxidant, hydrogen peroxide (Bailey and Dence, 1969). Dr. Bailey was one of at least five of Dr. Dence's doctoral students who wrote dissertations on H_2O_2 in wood chemistry. Among the others are Drs. Kempf, Nonni, Colodette and Sundman. Hydrogen peroxide delignification in extraction stages became standard practice in the late 1980s.

Later in his career Dr. Dence co-edited two excellent textbooks for the pulp, paper, and wood chemistry community. The first (co-edited with S.Y. Lin in 1992) was "Methods in Lignin Chemistry", Springer-Verlag, 578 pages and the second (co-edited with D.W. Reeve in 1996) was "Pulp Bleaching-Principles and Practice", TAPPI Press, 868 pages.

He was major professor for approximately 30 students who obtained Masters' or Doctoral degrees and was extremely helpful to so many other graduate students at SUNY-ESF but was never accused of being intrusive. It is worth noting that he was greatly appreciated as a supervisor for his readiness in attending to students' needs in a timely manner.

Dr. Dence was a very "efficient" scientist. Errors in the literature review and experimental design stages of his research were very, very rare. Results from his research protocols were always convincing and he was an excellent writer who could prepare a manuscript in only a few days. His skills as an editor were much appreciated by his colleagues. When an idea was not clear to Dr. Dence it was simply not logical or well-presented.

The advantage of being an "efficient" scientist was an ample amount of free time for his loving wife, Frances Dence and his hobbies: music, reading, gardening, and traveling. Last but not least he followed his Syracuse University Orangemen sport teams.

His excellence and great character will continue to influence all of his former students, colleagues, and friends for the foreseeable future. He will be sorely missed.

References

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