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17. Hermann Klare

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Personalities in Polymer Science



Hermann Klare

Honoring Professor Hermann Klare on his 90th Birthday

Hermann Klare is a highly regarded German fiber chemist and was a scientific leader in his country. Internationally well known are his pioneering achievements in early polyamide research and polyamide fiber technology and his activities on filament formation in the viscose spinning process. This research had substantial impact on the academic education of numerous scientists in fiber technology in the 1950's and 1960's.

Hermann Klare was born on May 12, 1909 in Hameln, Niedersachsen, Germany, as the son of a high school teacher in foreign languages, mostly French. He grew up in a liberal and intellectual home of wide interests. He went through the traditional German schooling of elementary and high school in his hometown Hameln.

In 1927, Hermann Klare enrolled at the University of Heidelberg where he studied mathematics and physics, but he transferred in 1929 to the University of Kiel in order to study chemistry there. He elected to work towards a PhD under the direction of Professor Otto Diels, who later in 1950 received, together with Professor Alder, the Nobel prize in chemistry for his work on *Diene* Reactions.

Hermann Klare's PhD thesis was

concerned with some aspects of this Diels-Alder-reaction, and he received his degree in 1933. He had the chance to pursue a possibly prominent academic career, but foresaw the restrictions of the then controlling regime in Germany on the traditional academic freedom. Therefore Klare at the end of 1933, joined the IG Farben AG in the Wolfen plant as a chemist in research and development of viscose fiber production; he remained there until 1939. The same year, at the age of 30, he became a member of the highly regarded research group of Paul Schlack, the inventor of polyamide (Nylon) 6 which was then called Perlon, working at the time in Berlin-Lichtenberg.

In 1943, Hermann Klare became responsible for the start of the production in the world's first Nylon 6 plant in Landsberg/Warthe. After the end of the war, he was taken by the Russian occupation forces to Russia and was assigned in Klin/USSR to assist in building there a copy of the Landsberg polyamide plant.

After being allowed to return to Germany in 1949, Klare established the first post-war Nylon 6 plant in Germany in Rudolstadt-Schwarza, Thuringia, which produced polyamide and viscose fibers. He managed the fiber production and became later the director of the factory.

In 1953, Klare was appointed head of the department of cellulose-based fibers and deputy director of the Institute of Fiber Research of the Academy of Sciences of the GDR, located in Teltow-Seehof near Berlin. In 1961 he became the director of this institute responsible for basic and applied research on the chemistry, physics and technology of synthetic fibers.

1968 Hermann Klare was elected President of the Academy of Sciences of the GDR, the former Prussian Academy which had been founded by Leibnitz in 1700. He served until 1979, when he retired at the age of 70.

Hermann Klare was basically an industrial chemist and an industrial manager and leader, interested also in conveying his knowledge and experience to the next generation. His industrial and scientific work was involved with viscose fibers and Nylon 6 technology. In the Wolfen plant he was engaged in viscose production and in the improvement of viscose fibers. In Berlin-Lichtenberg and Landsberg he worked on the perfection of Nylon 6 fibers, the technology of

caprolactam polymerization and the melt-spinning process for Nylon 6. He continued in these responsibilities in the Rudolstadt-Schwarza plant and published a book on "Fibres from Polyamides", which is still considered the standard monograph in this area.

Klare's research activities in Teltow-Seehof focused on the formation of the filament structure during the viscose spinning process. It resulted in the development of a technological progress as well as in an understanding of the role of zinc-ions and special additives ("modifiers") in the mechanism of the filament structure formation. At that time, Klare also served as a part-time professor in chemistry and technology of synthetic fibers at the Technical University in Leuna-Merseburg. He inspired numerous students to begin a professional career in fiber science and technology.

As the director of the Institute of Fiber Research in Teltow-Seehof he became involved in the promotion of the interaction between the institute and industry, and his successful efforts were instrumental in establishing the worldwide reputation of the Institute.

As President of the Academy he promoted the social acceptance and the public reputation of science, especially of chemistry. After his retirement, Klare became interested in the history of fiber research, and wrote a comprehensive monograph, which became a bestseller in this area of science.

Klare is well recognized as an excellent speaker, especially on fiber research, but also at social events in his areas of science. Examples are his Plenary Lecture at the IUPAC Tashkent/USSR Symposium on Macromolecules in 1979 and his "Dinner Lecture" on the history of fiber research at an international polymer conference in Potsdam in 1994 when he was 85 years old. At fiber and cellulose conferences Klare presented numerous plenary and invited lectures in Germany, but also in Scandinavia, Eastern Europe and Austria. He gave also lectures at various universities in Germany and abroad, e.g. in 1959 in Gothenburg/Sweden and in Uppsala/Sweden. Klare organized several symposia on chemistry of fibers, and he organized or chaired numerous scientific events of the Academy of Sciences of the GDR.

Hermann Klare published a total of more than 330 scientific papers, mostly in

the journals of the Academy. He holds 14 patents on the technology of chemical fibers. For many years, Klare was the Editor of "Faserforschung und Textiltechnik", which is now continued as "Acta Polymerica" by Wiley-VCH. He also served on a number of other Editorial Boards of journals in his field.

Because of his accomplishments and his service, Hermann Klare received numerous honors, mostly higher scientific honors of the GDR. The spectrum spans the wide range from one of the first National Prizes in Sciences and Technology awarded to him in 1951 for establishing the polyamide production in Rudolstadt-Schwarza, to the International Alccru-Prize, which he received in 1998 for his merits in fiber science from the Thuringian Institute of Textiles and Plastics Technology in Rudolstadt.

Hermann Klare was elected a member of a number of Academies of Sciences, including those of the GDR and the USSR. Most importantly, he is a member of the international academy of research scientists "Leopoldina", Halle/Saale. Hermann Klare received also several honorary doctoral degrees, including degrees from the University of Sofia, Bulgaria or the Technical University of Dresden in 1979.

Hermann Klare's personality is characterized by his capability of decision-making, dependability and carefulness together with generosity and correctness. He was never politically committed to the East German regime, even as a President of the Academy. This was well known, recognized and appreciated. After the incorporation of East Germany into the Federal Republic of Germany in 1990 a street was named after Klare in Rudolstadt, Thuringia, the "Hermann-Klare-Strasse".

Hermann Klare has a great love for the sea. As a student in Kiel, he was an active participant in the rowing team of the University. His love for the sea followed him into his advanced age: Even at the age of 85 he still took international cruises, and he frequently traveled to the "Kieler Foerde", the rowing regatta course of his youth.

As Klare approaches the age of 90, he is still interested in science and in everyday life. He participated in the meeting of the Leopoldina until last year. He is also interested in modern art and in foreign cultures, which he studied with great

interest during his international travels.

In 1934, Hermann Klare married Hildegard Hoeder, whom he met, when she was a student of pharmacy at the University of Kiel. They were married for almost 60 years, when she died in 1992. Hermann and Hildegard Klare have four children: Heinrich, Jutta, Christine and Annegret. All of them received an academic education, Heinrich as a chemist, Jutta in psychology, Christine in pharmacy, and Annegret in languages, especially in slavic languages. All of them are professionally active. On his 90th birthday, Hermann Klare will be congratulated also by 10 grandchildren and 10 great-grandchildren.

This article was prepared by **Burkart Philipp**, Max Planck Institute of Colloids and Interfaces, Teltow-Seehof, Germany, and **Otto Vogl**, Herman F. Mark Professor of Polymer Science, Department of Science and Engineering, University of Massachusetts at Amherst, MA 01002-4350, U.S.A.