Women in glass—beyond the glass ceiling

By Christine Heckle, Carol Jantzen, Denise M. Krol, and Kathleen A. Richardson

The International Year of Glass (IYOG) provides an opportunity to evaluate the progress made on diversifying the face of glass across the world.

The following multigenerational perspective of leaders within the U.S. glass community offers a benchmark on how far we have come and how far we have yet to go in the inclusion of women and minorities in the global glass community.

University of Central Florida post-docs at a Women in STEM Day in 2015, supporting the recruitment of middle school students into glass science and engineering.

Credit: Kathleen Richardson

Industry

Corning

• Mary Purcell Roche: Initially turned away because "women were disruptive in the lab," Roche became the first woman scientist at Corning Glass Works in 1942 with a M.S. in biochemistry.

• Ellen Lunn Mochel: In 1955, Mochel became the first woman with a Ph.D. to work at Corning after her husband argued that she be hired as a requirement for his own employment. Mochel investigated the reaction of sulfur dioxide with glass, which led her to work on Project Muscle, which advanced the concept of ion exchange to strengthen glass, which became a key building block for the future Gorilla Glass.

• Linda Pinckney: In 2002, Pinckney was named Corning's first woman research fellow.

• Lina Echeverria: In 2008, Echeverria was named the first woman vice president in the Science & Technology Division.

Bell Labs

• Suzanne Nagel: A 1972 Ph.D. graduate of the University of Illinois, Nagel served as a leader in Bell Labs' quest for low-loss optical fiber technology. In 1992, she was the first woman be appointed a Bell Labs Fellow, the highest technical recognition at Bell Labs. Nagel used her visibility to create mentoring opportunities for other women. In her honor, the 2018 Optical Fiber Communication Conference and Exhibition introduced a new networking space, the Suzanne R. Nagel lounge, focused on improving gender equity at the conference and the field of optical communications.

• Eva M. Vogel: Vogel was hired as one of very few technical women in 1970 in the materials research department. After she joined Bellcore (now iconectiv) in 1984, she became a leading scientist on nonlinear optical properties of glasses. Vogel was keenly aware of the difficulties facing women in glass science and was a mentor and adviser to young women scientists. She was also the first woman chair of the ACerS Electronics Division (1993–1994).

• Martina Sabourin: Sabourin was one of the first Asian women to support the Bell Labs team in their initial activities in prototyping and transitioning solutions in the flat panel display area in the early 1990s. Following her departure from Bell Labs in the mid-90s, Sabourin led quality and compliance activities at Owens Corning, Tyco Communications, and her current position at ThorLabs.

Academia

The Institute of Silicate Chemistry (St. Petersburg, Russia), Sheffield University (U.K.), and Alfred University (U.S) were the first universities to offer glass-related degree options. Alfred University graduated its first woman with a bachelor's in glass technology, Sylvia Gailar, in 1937. Gailar went on to become one of the first women to join the U.S. Army, designing lenses for military systems.

These institutions and others had some of the first women faculty teaching glass science and leading research efforts, including Natalia Vedishcheva (Inst. Silicate Chemistry), Doris Ehrt (Friedrich Schiller University, Germany), Angela Seddon (Sheffield University, now at University of Nottingham), and Alexis Clare (Alfred University). These women served as mentors to many of the women featured in the special "Women in Glass" issue of the *International Journal of Applied Glass Science*,[1] including Doris Möncke, Liping Huang, Delia Bauer, Alicia Durán, Kathleen Richardson, Heike Ebendorff-Heidepriem, Annie Pradel, Ana Candida Rodriguez, and Laeticia Petit.

The future of glass and STEM

Educators are recognizing the need to not only attract diversity into STEM-related academic programs, but to retain and mentor them into lifelong careers. Though slow, these efforts are starting to bear fruit, as evidenced by the gender diversity now seen at conferences and meetings.

References

[1]"Special Issue: Women in Glass," *International Journal of Applied Glass Science* **11** (3). Eds. Alicia Durán, Lili Hu, Kathleen A. Richardson, (2020). ■

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