**Women in Science and Engineering: The importance of visibility**

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**Abstract**: The article discusses how to increase the visibility of women scientists and engineers and their contributions in these fields. One way to discover women is to find papers describing their work and their lives. *The Canadian Institute for Women in Science and Engineering-L’Institut canadien pour les femmes en ingénierie et en sciences* (CIWES-ICFIS) began to collaborate with the University of Ottawa Library to encourage women to donate their papers. The project began in 2014 and has now close to 500 links with such donations in archives across Canada. Historians, researchers, and writers can find women and include them in their books on science, engineering, and technology. Another important source of information on women’s participation in science and engineering is through their technical presentations at conferences. A conference series: *International Conference of Women Engineers and Scientists* (ICWES), was unique in several ways: It was attended mostly by women, and presentations could be on a technical topic or on gender issues; it was held in various countries around the world between 1964 and today. A book has just been published on this extraordinary adventure.

**Keywords:** Women’s contributions in STEM fields, unique conferences (ICWES), history of these conferences and organisations.

**Introduction:** Until recently, when examining books on the history of science, technology, and engineering, it was rare to see any examples of women’s contributions in these fields. Women have been invisible in history books on STEM (science, Technology, engineering, mathematics) disciplines. This sad fact demanded action, to help historians find women and the important impact they have had and continue to have in science and engineering. Three women: Monique Frize, Claire Deschênes, and Gail Mattson, founded an institute incorporated in Canada on November 29, 2007; it was designated as a charitable organization on February 28, 2008. The *Canadian Institute for Women in Engineering and Science/L’Institut Canadien pour les femmes en ingénierie et en sciences* (CIWES-ICFIS) has, as one of its objectives, to create and maintain an online resource center (hub) and database to increase the visibility of women in STEM fields; and foster and disseminate research concerning STEM fields as both an educational and career choice. Two main projects have been launched with these goals in mind.

**1.** **The Canadian Archive of Women in STEM:** This initiative was a joint project of the University of Ottawa Library, Library and Archives Canada, and CIWES-ICFIS. In 2018, with the aim to increase the awareness of the historical contributions of Canadian women in STEM, it was decided by the three partners that an archive collecting the papers of women in these disciplines and making the archive records more accessible, would encourage historians and researchers in women’s studies to find women and write about their accomplishments. The project is also focussed on encouraging women currently working in STEM to donate their records for posterity. The main facet of the project is the Portal titled *Canadian Archive of Women in STEM* (1)*,* a pan-Canadian bilingual database which brings together information about archival records related to women in STEM held by Canadian archives and cultural institutions. The portal provides researchers interested in the history of women in STEM with a tool to locate resources and the information that they require. The portal currently has over 450 entries, with more having been recently identified. The University of Ottawa Library is currently in the process of updating the Portal to a new database system which will allow increased functionality and searching capabilities.

CIWES-ICFIS was able to coordinate a financial donation from the Canadian Nuclear Safety Commission to hire a student to help the library with the data transfer to the new system. Practical resources on how to best organize and prepare records for donations to an archive are now available. The Archives Committee met several times to prepare an information guide for women to consult. This guide is now available on the CIWES-ICFIS website (2). The Committee is creating a video tutorial on Archives. CIWES-ICFIS was also able to connect the University of Ottawa Library team to several important women and groups in Canadian STEM regarding record donations. The Library now holds the records of Monique Frize, Claire Deschênes, Claudette MacKay-Lassonde, and many more. It has links to hundreds of fonds, including the papers of Ursula Franklin in Toronto.

**2. A Book Documenting a Unique Conference Series:** Titled *Women’s Contributions to Science and Technology Through ICWES Conferences* (3), the book was published by Springer Nature, in December 2023. Authored by Monique Frize, Claire Deschênes, Ruby Heap, with collaboration of Karine Laporte, the book discusses the legacy of the conference series (International Conferences of Women Engineers and Scientists) that began in 1964 and continueto this day. **ICWES** spans the second half of the twentieth century and the beginning of the twenty-first. The book first presents how, at a time when there were few women engineers and scientists, a group of women organized a conference, in June 1964 in New York, which attracted 486 women. They presented their scientific achievements and debated on how to attract more women in STEM. This effort was carried out by visionary women leaders who found ways to keep this conference series going, in various geographical areas of the world, every three years or so for 59 years. The book presents the conference organizers, the hosting societies, the technical content, the changes in gender issues over time, and how the continuity has endured. The book also stresses the importance of global involvement, through conferences in locations such as USA, UK, Italy, Poland, France, India, Ivory Coast, Hungary, Japan, Canada, South Korea, Kenya, Germany, Australia, and New Zealand.

An important development occurred in 2002: The International Continuing Committee of ICWES, a group of volunteers who ensured the success of the next conference and the proper selection of its location, was informal with no address and several of the members were getting much older and some were deceased. The book describes efforts made to create a formal not-for-profit corporation. A Canadian corporation, the International Network of Women Engineers and Scientists (INWES), ensures the solid continuation of the conference series. In 2005, Claire Deschênes and Monique Frize ensured that the conference information (proceedings, speeches, business meetings, list of participants) was digitized. It is now available at the Canadian Archive of Women in STEM, University of Ottawa Library; it is our hope that researchers will continue to explore this rich material. As an important part of the Springer Women in Engineering and Science book series, the work aims to inspire women and men, girls and boys, to study and work in STEM fields. This book is important historically because it documents a unique adventure created by women in STEM leaders and pioneers. Their efforts established modes of networking and sharing their contributions in science, technology, and on gender issues.

**Conclusion**: The two main projects carried out by CIWES-ICFIS will hopefully lead to the inclusion of women in future books on the history of science and technology. The excuse “We cannot find them” is no longer valid; in fact, it was never valid as it was always possible to find women if one searched for them. However, now that we know where the information can be found, it is morally expected for new books, websites, documents, to present a gender-balanced publication. As for future research questions that could be pursued using the rich database on ICWES Conferences, a few are: **-**Evolution of the North and South, East and West dialogue. Contribution to knowledge and technologies by women and for women. Evolution of the “women in STEM” question over time. Reciprocal relationships between science and society. Contribution to Women’s Studies. Evolution in time of transversal issues (i.e. technological development, environment, communications, activism, …). Mult disciplinarity. Ecofeminism. Impact on and use of the international organizations and standards. Development of poor or developing countries, neo-liberalism. Traces of thinking on colonization and decolonization.

The future will reveal if women and men who write stories and biographies of people working in STEM fields will find the rich database with information on women and will they include them in their books. It is also important for women to understand how to preserve their papers and how to donate them. The book on women’s organizations and unique conferences is a historic story that needed to be told. The collection of relevant documents enabled the authors to tell the story of ICWES, INWES, and CIWES-ICFIS. At this time, all the documents are available in digitized for mat for all researchers who wish to examine them on the University of Ottawa Library web portal (2).

**Reference**

1. https://www.uottawa.ca/library/archives-special-collections/canadian-archive-of-women-in-stem

2. https://ciwesicfis.org / projects / archives-project/

3. Monique Frize, Claire Deschênes, Ruby Heap, with the collaboration of Karine Laporte (2024), “Women’s Contribution to Science and Technology through ICWES Conferences”, Springer International Publishing, January 2024, DOI [10.1007/978-3-031-33800-7](https://doi.org/10.1007/978-3-031-33800-7).