



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Women in Nuclear



A Selection of Records from the IAEA Lise Meitner Library Applicable to the Conference

For More Women in Nuclear:
*IAEA Marie Skłodowska-Curie Fellowship
and the Lise Meitner Programmes*

Resources

1 Towards a More Inclusive Future : a Comprehensive Assessment of Gender Diversity in Nuclear Medicine Education, Training and Workforce.

Brink, A. Philadelphia, PA : Elsevier Inc., 2023.
Available at Online Staff papers

Abstract

The field of nuclear medicine has undergone remarkable advances, particularly with the introduction of new devices, radionuclides for imaging and therapy, new clinical applications, and emergence of medical evidence. As this dynamic field continues its rapid expansion, there is an urgent need to increase the number of well-trained professionals globally. Consequently, advocating for nuclear medicine as a thriving field of study and work for women becomes paramount in ensuring the establishment of a robust workforce capable of meeting the growing demands. True gender equality will only be achieved when there is equal representation across the spectrum of the nuclear medicine professions, including nuclear medicine technologists, radiopharmacists, radiochemist, medical physicists, nuclear medicine physicians, administrators, academics, and leaders. Currently, the workforce exhibits an imbalance, with females predominating among nuclear medicine technologists, while the number of female physicians, and those in leadership positions remains comparatively lower. There are various factors which contribute to the existing inequities. Societal expectations often impose traditional gender roles that somehow discourage women from pursuing a career in the science, technology, and mathematics (STEM) fields, including nuclear medicine. Additionally, prevailing unequal work conditions and gender biases within the workplace can create barriers that hinder women's professional growth and development. Ways of addressing inequalities includes ensuring female participation at all levels of education and promoting the field at undergraduate level in medical school. Mentorship programs have demonstrated great success in guiding and supporting women at various stages of their careers. Therefore, there is a need for their expansion and enhancement. Furthermore, female role models play a pivotal role in shattering gender stereotypes and inspiring other women to pursue careers in nuclear medicine and its related fields. By addressing the existing imbalances and fostering an environment that actively encourages and supports women, we can harness the full potential of all professionals, thus ensuring the ongoing progress and advancement of nuclear medicine.

2 Science by women : stories from careers in STEM / editor, Eucharia Oluchi Nwaichi.

Cham, Switzerland : Springer, [2022] ©2022
Available at IAEA Circulation (5-055.2 S35)

Abstract

This book provides a roadmap for those embarking on a career in STEM, whether in the research or industry realms. Focusing on paths taken by women, the contributors lend their stories, tips and tricks, and hardships they faced entering into fields historically dominated by men. The authors provide practical advice, highlighting soft skills that are not often taught as modules in the classroom. Topics include research collaborations, performance enhancement, the gender lens in research design and development, imposter syndrome felt by many women in science, ethics in science, scaling feminine leadership, being an influencer as a science leader, and time and resources optimization for career advancement in science from resource-poor settings. Others interested in science and its impacts on society will also find the book informative and timely. As an important part of the Organization for Women in Science in the Developing World (OWSD), University of Port Harcourt Branch Book project, the work hopes to inspire women and men, girls and boys to enter and apply themselves to secure the future in STEM. Provides unique insight into women's experiences, challenges, and accomplishments in STEM, presenting a blueprint for those entering research or industry; Presents information from academia, research, and industry into STEM careers from multidisciplinary perspectives; Beneficial to professionals, researchers, and graduate students looking to hone their skills as STEM champions.

ISBN 9783030830311 hardcover

3 The Palgrave handbook of women and science since 1660 / editors, Claire G. Jones, Alison E. Martin, Alexis Wolf.

Cham: Palgrave Macmillan 2022.

Available at IAEA Circulation (5-055.2 P35)

Abstract

This handbook provides a comprehensive overview of core areas of investigation and theory relating to the history of women and science. Bringing together new research with syntheses of pivotal scholarship, the volume acknowledges and integrates history, theory and practice across a range of disciplines and periods. While the handbook's primary focus is on women's experiences, chapters also reflect more broadly on gender, including issues of femininity and masculinity as related to scientific practice and representation. Spanning the period from the birth of modern science in the late seventeenth century to current challenges facing women in STEM, it takes a thematic and comparative approach to unpack the central issues relating to women in science across different regions and cultures. Topics covered include scientific networks; institutions and archives; cultures of science; science communication; and access and diversity. With its breadth of coverage, this handbook will be the go-to resource for undergraduates taking courses on the history and philosophy of science and gender history, while at the same time providing the foundation for more advanced scholars to undertake further historical and theoretical investigation.

4 Seduced by radium : how industry transformed science in the American marketplace / Maria Rentetzi.

Rentetzi, Maria, author. Pittsburgh, Pa. : University of Pittsburgh Press, 2022.

Available at IAEA Circulation (546.44 R46)

Abstract

The discovery of radium by Marie and Pierre Curie in 1898 eventually led to a craze for radium products in the 1920s until their widespread use proved lethal for consumers, patients, and medical practitioners alike. Radium infiltrated American culture, Maria Rentetzi reveals, not only because of its potential to treat cancer but because it was transformed from a scientific object into a familiar, desirable commodity. She explores how Standard Chemical Company in Canonsburg, Pennsylvania—the first successful commercial producer of radium in the United States—aggressively promoted the benefits of radium therapy and its curative properties as part of a lucrative business strategy. Over-the-counter products, from fertilizers to paints and cosmetics to tonics and suppositories, inspired the same level of trust in consumers as a revolutionary pharmaceutical. The radium industry in the United States marketed commodities like Liquid Sunshine and Elixir of Youth at a time when using this new chemical element in the laboratory, in the hospital, in private clinics, and in commercial settings remained largely free of regulation. Rentetzi shows us how marketing campaigns targeted individually to men and women affected not only how they consumed these products of science but also how that science was understood and how it contributed to the formation of ideas about gender. Seduced by Radium ultimately reveals how innovative advertising techniques and seductive, state-of-the-art packaging made radium a routine part of American life, shaping scientific knowledge about it and the identities of those who consumed it.

5 Promising practices for addressing the underrepresentation of women in science, engineering, and medicine : opening doors / editors, Alex Helman, Ashley Bear, Rita Colwell.

Washington, DC : The National Academies Press, [2020] ©2020

Available Online (2020)

Abstract

Careers in science, engineering, and medicine offer opportunities to advance knowledge, contribute to the well-being of communities, and support the security, prosperity, and health of the United States. But many women do not pursue or persist in these careers, or advance to leadership positions - not because they lack the talent or aspirations, but because they face barriers, including: implicit and explicit bias; sexual harassment; unequal access to funding and resources; pay inequity; higher teaching and advising loads; and fewer speaking invitations, among others. There are consequences from this underrepresentation of women for the nation as well: a labor shortage in many science, engineering, and medical professions that cannot be filled unless institutions and organizations recruit from a broad and diverse talent pool; lost opportunities for innovation and economic gain; and lost talent as a result of discrimination, unconscious bias, and sexual harassment. Promising Practices for Addressing the Underrepresentation of Women in Science, Engineering, and Medicine reviews and synthesizes existing research on policies, practices, programs, and other interventions for improving the recruitment, retention, and sustained advancement into leadership roles of women in these disciplines. This report makes actionable recommendations to leverage change and drive swift, coordinated improvements to the systems of education, research, and employment in order to improve both the representation and leadership of women.

URL <http://libweb.iaea.org/library/eBooks/Promising-practices.pdf>

ISBN 9780309498241

6 Cracking the digital ceiling : women in computing around the world / editors, Carol Frieze, Jeria L. Quesenberry.

Cambridge : Cambridge University Press, 2020.
Available at IAEA Circulation (005.966:004-055.2 C73)

Abstract

"Is computing just for men? Are men and women suited to different careers? This collection of global perspectives challenges these commonly held western views, perpetuated as explanations for women's low participation in computing. By providing an insider look at how different cultures worldwide impact the experiences of women in computing, the book introduces readers to theories and evidence that support the need to turn to environmental factors, rather than innate potential, to understand what determines women's participation in this growing field. This wakeup call to examine the obstacles and catalysts within various cultures and environments will help those interested in improving the situation understand where they might look to make changes that could impact women's participation in their classrooms, companies, and administrations. Computer scientists, STEM educators, students of all disciplines, professionals in the tech industry, leaders in gender equity, anthropologists, and policy makers will all benefit from reading this book. Dr. Carol Frieze works on diversity and inclusion in Carnegie Mellon's School of Computer Science. She focuses on culture and broadening participation in computing. She is co-author of *Kicking Butt in Computer Science: Women in Computing at Carnegie Mellon University* (2015). Frieze is winner of the 2016 AccessComputing Capacity Building Award and the 2017 winner of the Computing Research Association's A. Nico Habermann Award. Dr. Jeria L. Quesenberry is an associate teaching professor of information systems at Carnegie Mellon University. Her research interests include cultural influences on IT students and professionals, social inclusion, and broadening participation. She is co-author of "Kicking Butt in Computer Science."
ISBN 9781108740074

7 Why don't more girls choose to pursue a science career?

Paris: OECD Publishing, 2019.

Abstract

When new PISA data are published, many researchers around the world analyse them with the aim of shedding light on all sorts of questions. One question in search of an answer: why are women under-represented in science, technology, engineering and mathematics (STEM) professions? Using data from the Program for International Student Assessment (PISA), Gijsbert Stoet and David Geary examined the nature of the gender gap in STEM fields. The authors analysed data from 67 countries and economies participating in the 2015 cycle of PISA; these data were supplemented by country-level indicators on gender equality (the Global Gender Equality Index) and the proportion of women graduating in a STEM field. Their analysis yielded an interesting result.
URL <https://doi.org/10.1787/02bd2b68-en>

8 Women in physics : 6th IUPAP International Conference on Women in Physics : Birmingham, UK, 16–20 July 2017 / editors, Geraldine Cochran, Chandralekha Singh, Nicola Wilkin.

OECD Nuclear Energy Agency. Paris : OECD NEA, 2017.
Available Online
Form Only available in electronic format.
URL http://www.oecd-nea.org/jcms/pl_15074

9 Becoming leaders : a practical handbook for women in engineering, science, and technology / F. Mary Williams, Carolyn J. Emerson.

Williams, F. Mary, author. Reston, Virginia : American Society of Civil Engineers, [2019] ©2019
Available at IAEA Circulation (331.1-055.2(73) W55 2019)

Abstract

"Becoming Leaders: A Practical Handbook for Women in Engineering, Science, and Technology, Second Edition is intended for people interested in the advancement of their own careers or in the development of human resources in their organization. Information is given in a reader-friendly format with easy-to-find bulleted lists supported by current research in sociology, education, and psychology. This second edition includes new information on implicit bias, other factors affecting leadership success, the impact of social media, management of diversity and inclusion initiatives, and creating respectful workplaces. Professional women in STEM, and managers interested in their progress, will quickly recognize the context of many of the information bytes and see the application in their own workplaces. This handbook provides readers with action plan elements for achieving important goals--both personal and organizational. A sample organizational leadership skills checklist is included. Chapters can be read in any order, with roadmaps for students, career women, faculty, and managers.
ISBN 9780784415238

10 Mentoring a future generation of female leaders in science and engineering : Joshikai in Fukushima for future scientists : international mentoring workshop in science, engineering and decommissioning.

Boulogne-Billancourt : NEA, 2019.

Available Online (2019)

Abstract

In today's society, the population of men and women is essentially equal in terms of numbers. However, in the domain of science and technology, which is part of the same society, this is not the case. Despite the fact that many female primary and secondary school students outperform their male counterparts in science, technology, engineering and mathematics (STEM) subjects, female students tend not to choose the science and engineering pathway when entering university. This reduced pipeline manifests in the professional world. In many countries, the women who do pursue science and engineering careers often face daunting societal pressures and the practical challenges of managing professional careers and family obligations. In the end, women in science and engineering fields are fewer than might be expected, often receive less income for their work, and are vastly underrepresented in leadership positions.

URL <https://www.oecd-nea.org/hans/pubs/2019/7514-mentoring-workshop-2019.pdf>

11 Women in their element : selected women's contributions to the periodic system / editors, Annette Lykknes, Brigitte Van Tiggelen.

Hackensack : World Scientific, 2019.

Not Available at IAEA Circulation (DUE 24-01-08)

Abstract

This year we celebrate the 150th anniversary of Mendeleev's first publication of the Periodic Table of Elements. This book offers an original viewpoint on the history of the Periodic Table: a collective volume with short illustrated papers on women and their contribution to the building and the understanding of the Periodic Table and of the elements themselves. Few existing texts deal with women's contributions to the Periodic Table. A book on women's work will help make historical women chemists more visible, as well as shed light on the multifaceted character of the work on the chemical elements and their periodic relationships. Stories of female input, the editors believe, will contribute to the understanding of the nature of science, of collaboration as opposed to the traditional depiction of the lone genius. While the discovery of elements will be a natural part of this collective work, the editors aim to go beyond discovery histories. Stories of women contributors to the chemistry of the elements will also include understanding the concept of element, identifying properties, developing analytical methods, mapping the radioactive series, finding applications of elements, and the participation of women as audiences when new elements were presented at lectures. As for the selection of women, the chapters include pre-periodic table contributions as well as recent discoveries, unknown stories as well as more famous ones. The main emphasis will be on work conducted in the late 19th century and early 20th century. Furthermore, the book includes elements from different groups in the periodic table, so as to represent a variety of chemical contexts.

ISBN 9789811206283 hardcover

9789811207686 paperback

12 Sexual harassment of women : climate, culture, and consequences in academic sciences, engineering, and medicine / editors, Paula A. Johnson, Sheila E. Widnall, Frazier F. Benya.

Washington DC : The National Academies Press, 2018.

Format: Electronic book

Abstract

Over the last few decades, research, activity, and funding has been devoted to improving the recruitment, retention, and advancement of women in the fields of science, engineering, and medicine. In recent years the diversity of those participating in these fields, particularly the participation of women, has improved and there are significantly more women entering careers and studying science, engineering, and medicine than ever before. However, as women increasingly enter these fields they face biases and barriers and it is not surprising that sexual harassment is one of these barriers. Over thirty years the incidence of sexual harassment in different industries has held steady, yet now more women are in the workforce and in academia, and in the fields of science, engineering, and medicine (as students and faculty) and so more women are experiencing sexual harassment as they work and learn. Over the last several years, revelations of the sexual harassment experienced by women in the workplace and in academic settings have raised urgent questions about the specific impact of this discriminatory behavior on women and the extent to which it is limiting their careers. Sexual Harassment of Women explores the influence of sexual harassment in academia on the career advancement of women in the scientific, technical, and medical workforce. This report reviews the research on the extent to which women in the fields of science, engineering, and medicine are victimized by sexual harassment and examines the existing information on the extent to which sexual harassment in academia negatively impacts the recruitment, retention, and advancement of women pursuing scientific, engineering, technical, and medical careers. It also identifies and analyzes the policies, strategies and practices that have been the most successful in preventing and addressing sexual harassment in these settings.

URL <http://libweb.iaea.org/library/eBooks/NAP-Sexual-harassment-of-women.pdf>

ISBN 9780309470872

9780309470902 ebook

13 Women in global science : advancing academic careers through international collaboration / Kathrin Zippel.

Zippel, Kathrin, author. Stanford : Stanford University Press 2017.
Available at IAEA Circulation (5-051(73) Z57)

Abstract

Scientific and engineering research is increasingly global, and international collaboration can be essential to academic success. Yet even as administrators and policymakers extol the benefits of global science, few recognize the diversity of international research collaborations and their participants, or take gendered inequalities into account. This is the first book to consider systematically the challenges and opportunities that the globalization of scientific work brings to U.S. academics, especially for women faculty. Kathrin Zippel looks to the STEM fields as a case study, where gendered cultures and structures in academia have contributed to an underrepresentation of women. While some have approached underrepresentation as a national concern with a national solution, Zippel highlights how gender relations are reconfigured in global academia. For U.S. women in particular, international collaboration offers opportunities to step outside of exclusionary networks at home. International collaboration is not the panacea to gendered inequalities in academia, but, as Zippel argues, international considerations can be key to ending the steady attrition of women in STEM fields and developing a more inclusive academic world.

ISBN 9781503600393
9781503601499

14 Beyond Curie: four women in physics and their remarkable discoveries, 1903 to 1963 / Scott Calvi.

Calvi, Scott, author. San Rafael, California : Morgan & Claypool Publishers, [2017] Bristol : IOP Publishing, [2017]
Available Online

Abstract

In the 116 year history of the Nobel Prize in Physics, only two women have won the award; Marie Curie (1903) and Maria Mayer (1963). During the 60 years between those awards, several women did work of similar caliber. This book focuses on those women, providing biographies for each that discuss both how they made their discoveries and the gender-specific reception of those discoveries. It also discusses the Nobel process and how society and the scientific community's treatment of them were influenced by their gender.

URL <http://iopscience.iop.org/book/978-1-6817-4645-6>

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9781681746449 print

15 Mentoring a future generation of female leaders in science and engineering : report on the International Mentoring Workshop in Science and Engineering in Chiba, Japan.

OECD Nuclear Energy Agency. Paris : OECD NEA, 2017.

Available Online

Form Only available in electronic format.

URL http://www.oecd-nea.org/jcms/pl_15074

16 Knowing her place: positioning women in science / Valerie Bevan, Caroline Gatrell.

Bevan, Valerie, author. Cheltenham : Edward Elgar Publishing, 2017.

Available at IAEA Circulation (5-051 B48)

Abstract

More women are studying science at university and they consistently outperform men. Yet, still, significantly fewer women than men hold prestigious jobs in science. Why should this occur? What prevents women from achieving as highly as men in science? And why are so few women positioned as 'creative genius' research scientists? Drawing upon the views of 47 (female and male) scientists, Bevan and Gatrell explore why women are less likely than men to become eminent in their profession. They observe three mechanisms which perpetuate women's lowered 'place' in science: subtle masculinities (whereby certain forms of masculinity are valued over womanhood); (m)otherhood (in which women's potential for maternity positions them as 'other'), and the image of creative genius which is associated with male bodies, excluding women from research roles.

ISBN 9781783476510

15 Women and physics / Laura McCullough.

McCullough, Laura, author. San Rafael, CA : Morgan & Claypool Publishers ; Bristol, UK : IOP Publishing, 2016.
Available at IAEA Circulation (53-055.2 M33)

Abstract

This book begins with an examination of the numbers of women in physics in English-speaking countries, moving on to examine factors that affect girls and their decision to continue in science, right through to education and on into the problems that women in physics careers face. Looking at all of these topics with one eye on the progress that the field has made in the past few years, and another on those things that we have yet to address, the book surveys the most current research as it tries to identify strategies and topics that have significant impact on issues that women have in the field.

ISBN 9781681742762 paperback

16 The only woman in the room : why science is still a boys' club / Eileen Pollack.

Pollack, Eileen Boston, Mass. : Beacon Press, 2015
Available at IAEA Circulation (5-051:305 P65)

Abstract

Bright college years -- Leaving Liberty -- A different kind of math -- Science fair -- Science unfair -- Advanced placement -- Surviving Yale -- Freshman disorientation -- Too much male hormone -- Electricity and magnetism -- The philosophy of existence -- X-10, Y-12, K-25 -- Life on other planets -- Return to New Haven -- The two-body problem -- Statics and dynamics -- Integration and differentiation -- The women who don't give a crap -- Parallel universes -- The sky is blue.
ISBN 9780807046579

17 Success strategies from women in STEM : a portable mentor / editors, Peggy A. Pritchard, Christine S. Grant.

London : Academic Press, 2015
Not Available at IAEA Circulation (DUE 24-01-08)
ISBN 9780123971814

18 Headstrong : 52 women who changed science -- and the world / Rachel Swaby.

Swaby, Rachel New York : Broadway Books, 2015
Available at IAEA Circulation (5-055.2 S93)

Abstract

The earth and stars -- Mary Putnam Jacobi (1842) -- Maria Mitchell (1818) -- Annie Jump Cannon (1863) -- Inge Lehmann (1888) -- Marie Tharp (1920) -- Yvonne Brill (1924) -- Sally Ride (1951) -- Medicine -- Anna Williams (1863) -- Alice Ball (1892) -- Gerti Radnitz Cori (1896) -- Helen Brooke Taussing (1898) -- Elsie Widdowson (1906) -- Virginia Apgar (1909) -- Dorothy Crowfoot Hodgkin (1910) -- Gertrude Elion (1918) -- Jane C. wright (1919) -- Biology and the environment -- Maria Sibylla Merian (1647) -- Jeanne Villepreux-Power (1794) -- Mary Anning (1799) -- Ellen Swallow Richards (1842) -- Alice Hamilton (1869) -- Alice Evans (1881) -- Tilly Edinger (1897) -- Rachel Carson (1907) -- Ruth Patrick (1907) -- Genetics and development -- Nettie Stevens (1861) -- Hilde Mangold (1898) -- Charlotte Auerbach (1899) -- Barbara McClintock (1902) -- Salome G. Waelsch (1907) -- Rita Levi-Montalcini (1909) -- Rosalind Franklin (1920) -- Anne McLaren (1927) -- Lynn Margulis (1938) -- Physics -- Emilie du Chatelet (1706) -- Lise Meitner (1878) -- Irene Joliot-Curie (1897) -- Maria Goeppert Mayer (1906) -- Marguerite Perey (1909) -- Chien-Shiung Wu (1912) -- Rosalyn Yalow (1921) -- Math and technology -- Maria Gaetana Agnesi (1718) -- Ada Lovelace (1815) -- Florence Nightingale (1820) -- Sophie Kowalevski (1850) -- Emmy Noether (1882) -- Mary Cartwright (1900) -- Grace Murray Hopper (1906) -- Invention -- Hertha Ayrton (1854) -- Hedy Lamarr (1913) -- Ruth Benerito (1916) -- Stephanie Kwolek (1923).
ISBN 9780553446791