

285 What does it mean to belong in the physical sciences?

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Research Domains

Academic practice, work, careers and cultures (AP)

Abstract

In recent years, professional societies have acknowledged the impact of belonging in science and pledged commitments to foster a more inclusive and representative academic culture as a means of addressing the lack of diversity and underrepresentation. The Royal Society of Chemistry concluded that a sense of belonging led 'to better science outcomes'.

Humans evolved to seek out and maintain close personal relationships. However, the sense of belonging felt by an individual is fluid, and belonging cannot be perceived as an absolute value that an individual may or may not possess. On the contrary, it is a sense of self that may be built and damaged depending on the cues we receive from our environment. In this paper we draw on our lived experiences to explore feelings of belonging and exclusion within the physical sciences – specifically chemistry - as three academics working within the field specifically around EDI.

Full paper

There is a long history of studying scientific epistemology and places of work to understand the creation and conflict of scientific knowledge (B Latour, 1999; B Latour & Woolgar 1986; Barnes et al., 1996). Historically, the emphasis has been on the production of knowledge and truth rather than an exploration of who scientists are and their lived experiences as researchers inside and outside of their physical workplace.

In recent years, professional societies have acknowledged the impact of belonging in science and pledged commitments to foster a more inclusive and representative academic culture. The human need to belong amongst our peers and community is innate. Humans evolved to seek out and maintain close personal relationships. Strong social ties were and arguably remain, critical to survival (Tomasello et al., 2012). We scrutinise our belonging status for subtle signs of change or threats (Gardner et al., 2005). Those who suffer an unmet need for belonging become more proficient at monitoring the social clues around them, though ironically, their capacity for non-social complex cognitive tasks may weaken (Baumeister & Leary, 1995). It is not difficult to imagine why this is especially problematic for academics and researchers, specifically those who are marginalised or underrepresented in their discipline who are less likely to feel as though they belong.

Science is not known for its diversity, and the landscape in chemistry is particularly problematic (RSC, 2018). The Royal Society of Chemistry released a report on 'Belonging in the Chemical Sciences' (Royal Society of Chemistry, 2021) which concluded that a sense of belonging led 'to better science outcomes' (ibid. p12). Area-specific work by WISC (the International Women in Supramolecular Chemistry Network) highlighted the need to facilitate sharing of stories and feelings of belonging, particularly for those in underrepresented groups: 'If the stories and experiences of those who do not fit the stereotype are not visible, then it is harder for those outside the majority group to feel they belong' (Caltagirone et al. 2021, 11577).

The sense of belonging felt by an individual is fluid, and it would be expected that people experience varying levels of belonging over time. This fluid nature is not well studied, however it is clear that belonging cannot be perceived as an absolute value that an individual may or may not possess. On the contrary, it is a sense of self that may be built and damaged depending on the cues we receive from our environment. In this paper we draw on our lived experiences to explore feelings of belonging and exclusion within the physical sciences – specifically chemistry as three academics working within the field specifically around Equity/Equality, Diversity, and Inclusion (EDI).

Mariam is a doctoral student exploring how to revolutionise research culture in chemistry and the physical sciences. Her first degree was in biomedical science, and she worked for a year as a film producer with a particular passion for science communication. Her PhD is shared between chemistry and sociology, and her in-depth insider ethnography includes laboratory-based work and skill development. She is part of two research groups and two research cultures, and has mixed feelings around where she belongs.

Panagiota identifies as a chemist. She completed her first degree in chemistry, has a PhD in chemistry education, and works specifically around inclusion, climate change, and increasing equity and diversity in the chemical sciences. However, she regularly experiences feelings of 'not belonging', and feels that other chemists perceive her differently as she does not conduct laboratory-based research, and instead utilises social science methodologies and approaches.

Jennifer is a full member of the Royal Society of Chemistry. Like Panagiota, she has a first degree in chemistry, and continued on to a computational chemistry PhD. She left after 2 ½ years when pregnant with her second child and worked as a somatic movement therapist and yoga teacher before finishing a different PhD in education. For many years she did her best to expunge her time in chemistry from her CV and memory. Since late 2019 she has used her lived experiences to work with chemists within WISC around various aspects of marginalisation to raise awareness and effect change (Caltagirone et al., 2021; J. Leigh, Hiscock, et al. 2022a; J. Leigh, Hiscock, et al. 2022b; Slater et al. 2022; Leigh, Busschaert, et al. 2022; J. Leigh, Smith, et al. 2022; Egambaram et al. 2022; J. Leigh, Sarju, and Slater 2024). Although she has publications in Q1 chemistry journals and is perceived by chemists as one of them she is reluctant to identify as a chemist (or sociologist).

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