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Editorial: Women in science: Materials 2021

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Editorial on the Research Topic
Women in science: Materials 2021

According to UNESCO Institute for Statistics data (UIS—UNESCO Institute for Statistics, 2020), female scientists account for a minority of the world's researchers. Only 30% of researchers worldwide are women. Long-standing biases and gender stereotypes are discouraging girls and women away from science-related fields. In particular, STEM (science, technology, engineering, and mathematics) research is traditionally male dominated and women remain under-represented.

The gender gap in science is also highlighted in the European Unions's She Figures publications, first released in 2003 and updated every 3 years since. The She Figures 2021 publication (EU—European Commission, 2021a) uses the latest available statistics to monitor the state of gender equality in research and innovation across Europe and beyond, through providing comparable data and analysis for approximately 88 indicators. The data follow the "chronological journey" of women from graduating from doctoral studies to participating in the labour market and acquiring decision-making roles, while exploring differences in women's and men's working conditions and research and innovation output.

In the European Union (EU—European Commission, 2021b), women are close to reaching gender parity among doctoral graduates (48.1%) but are still under-represented in technical professions (24.9%). In addition, more women (+1.3%) work under precarious contracts than their male counterparts. Women are also under-represented at the highest level in academia—accounting for 42.3% of academic staff overall and only 26.2% of the "A grade" staff positions (equivalent to full professorship) in the higher education sector—and in decision-making positions with only 23.6% of female heads of higher education institutions. Besides, women are less successful than men in accessing research funding (−3.9%) and are significantly under-represented (10.7%) among inventors; they also publish less than men with a widening gender gap among active authors as the level of seniority increases the ratio of women to men for active authors being closest to gender parity (i.e., 1.0) among early-stage authors (0.8), and furthest for senior authors (0.5) (EU—European Commission, 2021a).

As role models are important to show to younger generations the growing impact of female researchers to science, and continuing the spirit of the International Day of Women and Girls in Science, Frontiers in Materials has decided to offer a platform to bring into the spotlight,

FIGURE 1
"Women in Science: Materials 2021" article collection in Frontiers in Materials.

highlight the impact, and promote the contributions and research outcomes of female scientists from different parts of the world working in materials science and engineering.

Following the inaugural edition (Bignozzi et al., 2021), this 2nd volume of the "Women in Science: Materials" article collection (Figure 1) gathers a selection of original articles with the lead author and/or corresponding author being a woman.

Seven contributions (one perspective, one review and five original research articles) present advances in theory, experiment, and methodology with applications to compelling problems, across different sections of the journal:

➢ Biomaterials: In a perspective paper, Vallet Regi highlighted the evolution of implantable biomaterials which bring together knowledge from the world of science, engineering, biology, and medicine, and how science and technology are imposing new designs with combinations of new biomaterials, new coatings, and new design and manufacturing technologies.
➢ Polymeric and Composite Materials: Kausar reviewed the progress made in the field of polymer/fullerene nanocomposites, a unique zero-dimensional nanocarbon nanomaterial, with a focus on the energy storage applications. In another contribution, Saffar et al. investigated the influence of prepreg parameters on the interlaminar consolidation of carbon fibre-reinforced PEKK thermoplastic laminates manufactured by vacuum-bag-only process by means of a dual approach coupling experimentation (*in situ* monitoring throughout the manufacturing cycle and subsequent quality assessment) and modelling (finite elements) of the intimate contact establishment during consolidation.
➢ Mechanics of Materials: Bonvalet Rolland and Borgenstam developed a new mean-field modelling tool to correctly tackle the problem of precipitation kinetics during deformation in multicomponent metallic alloys.
➢ Structural Materials: Three research articles illustrate the development of eco-friendly cementitious materials by replacing some components of structural concretes and mortars by various by-products or waste materials such as sediments (Kleib et al.), plastics (El-Nadoury), ceramic waste powder and rice husk ash (El-Nadoury).

The Guest Editorial team hope that this collection of papers highlighting the diversity of research performed by women researchers working in materials science and engineering will inspire future collaborations involving more female principal investigators.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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