

Horizon Europe and Gender+: a focus on Nano Science and Technology

Rita Bencivenga¹, Sara Laureti², Davide Peddis^{2,3}, Cinzia Leone¹

¹University of Genoa, DCCA, Via Dodecaneso 13, Genoa, Italy

²CNR- ISM- nM2-Lab, Via Salaria km 29,300, Monterotondo Scalo (RM), Italy

³University of Genoa, DCCL, nM2-Lab, Via Dodecaneso 31, Genoa, Italy

rita.bencivenga@unige.it

In the last few decades, addressing gender balance and equal opportunities in EU funded proposals has become increasingly widespread and is generally accepted and implemented. The European Union has promoted the adoption of three strategies. Fix the Numbers: focuses on increasing women's and other under-represented groups' participation; Fix the Institutions: promotes inclusive equality in careers through structural change in research organizations; Fix the Knowledge (or "gendered innovations"): stimulates excellence in science and technology by integrating sex, gender, and intersectional analysis into research.

Since January 2022, a Gender Equality Plan (GEP), or equivalent strategy, has been an eligibility criterion of the EU Horizon Europe programme. However, the link between this programmatic document and the content of the research projects is still unclear. The authors analysed the literature in the nanotechnology sector, identifying articles that paid attention to gender equality and adopting a gender perspective in research paths to identify the strategies adopted and the results obtained.

Some older articles reflect the need to "fix the numbers" and "fix the institutions" [1] [2], while more recent research shows the importance of classifying individuals not only through the XX female / XY male dichotomy but also by considering various biological, cultural and socioeconomic factors [3]. Currently, researchers, funding agencies, peer-reviewed journals and universities are coordinating efforts to implement robust methods of sex and gender analysis [4]. However, for many scientists, adopting this perspective requires rethinking their approach to research, which is even more complicated when dealing with fundamental research on materials.

This paper focuses on an ongoing Horizon Europe research project on microfabrication, magnetism, electroplating, photovoltaics and related subjects. To promote a gender+ perspective, the authors are implementing several micro-actions throughout the project's duration, including specific activities connected to gender-related topics, integrating specific strategies into the tasks and deliverables, and collecting and analysing disaggregated data in the outreach tasks. The experience seeks to be replicated in future projects, where adopting a gender+ perspective could benefit the research community and society.

[1] C. Reinhold, "The gender game," *Nano Today*, vol. 2, no. 3, p. 1, 2007, doi: 10.1016/S1748-0132(07)70070-1

[2] Y. Meng, "Gender distinctions in patenting: Does nanotechnology make a difference?," *Scientometrics*, vol. 114, no. 3, pp. 971–992, 2018, doi: 10.1007/s11192-017-2607-4

[3] J. L. J. Yang, R. Narayanamurthy, J. Y. Yager, and L. D. Unsworth, "How does biological sex affect the physiological response to nanomaterials?," *Nano Today*, vol. 41, p. 101292, 2021, doi: 10.1016/j.nantod.2021.101292

[4] C. Tannenbaum, R. P. Ellis, F. Eyssel, J. Zou, and L. Schiebinger, "Sex and gender analysis improves science and engineering," *Nature*, vol. 575, no. 7781, pp. 137–146, 2019, doi: 10.1038/s41586-019-1657-6