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Editorial corner – a personal view

Researchers on the edge: Balancing popularity and personal interest

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In the field of polymers, similar to other scientific areas, dominant research trends emerge from time to time. These trends are sometimes dictated by external factors, including health threats, socio-political dynamics, economic considerations, or even environmental issues (https://doi.org/10.1007/bf02457439). Examples include the SARS-CoV-2 pandemic (https://doi.org/10.3144/expresspolymlett.2020.41) or the situation of marine plastic waste (https://doi.org/10.1016/j.wasman.2020.09.029). In such cases, the scientific community can clearly identify research objectives aimed at addressing these problems (https://doi.org/10.3103/S0147688220040036).

In addition to these topics, or their absence, the dominant research directions are often grouped around some ideas that appear particularly important for the further advancement of science and technology. When the number of publications in a newly emerging research field reaches a critical mass, there is a predictable rapid growth in that area. According to the Scopus database, the annual number of articles on a polymer research topic that has become mainstream can reach 4000 to 6000 articles per year within a few years. Table 1 lists some of these topics as examples, indicating the year when the annual number of publications in the given research area reached 100 and 1000 documents per year, respectively. During this period, exponential growth is characteristic in the number of published articles, which can be described by the doubling rate. It can be observed that for the dominant research topics examined, this doubling rate is typically less than 10 years and, in some cases, even less than 2 years.

Table 1. Growth trends in some key polymer research areas (based on the Scopus database).

Research topic	Documents/year		Doubling time (during this period)
	100	1000	
Biopolymers	1980	2003	7.9
Plastic recycling	1992	2018	8.1
Polymer nanocomposites	1999	2005	1.7
Single polymer composites	1999	2021	7.5
Electrospinning	2002	2007	1.7
Shape memory polymers	2004	2022	6.2
Self-healing polymers	2010	2022	3.7
Microplastic	2015	2019	1.2
Marine plastic waste	2015	2021	1.9
Vitrimers	2020	?	?

The increasing volume of published articles generates a corresponding rise in citations, leading both researchers and editors of scientific journals to actively engage with these dominant topics. The swift acceleration of citation counts facilitates the ability of authors and research groups to secure scientific grants and funding opportunities (https://doi.org/10.1073/pnas.2012208118). This phenomenon is often promoted by national leaders and by institutions competing for higher positions in academic rankings (https://doi.org/10.1080/03075079.2021.1942822). More successful researchers often receive much more attention, resources, and recognition than their less well-known colleagues, even when they make similar contributions This self-reinforcing mechanism about the academic reputation of scientists

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is referred to as the Matthew effect, which refers to a passage from the Gospel of Matthew (https://doi.org/10.1016/j.jedc.2020.104058): 'For unto everyone that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath' (Matthew 25:29).

The identification and engagement with mainstream scientific trends enable a rapid ascension of scientometric indicators, even when the additional scientific merit of a given research endeavor is modest. In contrast, researchers primarily driven by scientific curiosity and dedicated to elucidating unexplained phenomena in their studies frequently garner less attention from the academic community, particularly when their work diverges from prevailing research trends. Although it is indeed feasible for substantial scientific advancements to arise from such inquiries, instances of groundbreaking discoveries originating from this approach are quite infrequent. Nonetheless, it can be asserted that pioneering contributions are generally anticipated from creative and autonomous researchers who remain steadfast in their pursuit of innovative ideas, notwithstanding the prevailing criticism and skepticism they may face (https://doi.org/10.1525/collabra.95047).

The spread of dominant research topics effectively advances science, but it also comes with various side effects. It is undeniably more rewarding and less risky to pursue established paths set by others than to focus on a more uncertain topic that might not gain future recognition. As a result, there are researchers who engage with dominant topics not primarily driven by scientific interest, but rather in the hope of increasing their citation counts. Others try to balance their research by addressing these prominent topics out of obligation while also pursuing projects that stem from genuine scientific curiosity as a 'hobby'. Some researchers, however, opt to market their topics driven by scientific curiosity by incorporating popular keywords to make them more appealing. This can create challenges for creative researchers, leading to either additional workloads or the sidelining of their innovative ideas, both of which can ultimately lead to burnout.

These considerations lead to several important questions:

1. To what extent can a research project be classified as fundamental if the researcher is primarily motivated by factors other than scientific curiosity, with the main goal being to maximize funding opportunities rather than to understand underlying principles, laws, and phenomena?
2. Are citation counts and other metrics derived from them sufficient indicators for evaluating the quality of a researcher on their own? Or do they mainly reflect how well researchers adapt to popular trends in the field?
3. What is the impact of following one's intrinsic motivation on a researcher's professional well-being, if it results in falling behind in the competitive scientific landscape? Conversely, what are the potential consequences for researchers who feel compelled to adhere to current trends rather than concentrating on their genuine interests? How might these situations impact their enthusiasm for research?
4. To what degree are early-career researchers motivated by aspirations for success and recognition, and how much are they inspired by the opportunity to investigate scientific questions that captivate their interest and to admire the inherent beauty of those subjects?

Thus, one of the primary responsibilities of both the younger and older generations of researchers is to find a suitable balance that satisfies their scientific curiosity, fosters creativity, enriches science, and simultaneously ensures their success.

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topic editor