

Layer by layer, spin by spin

There comes a time in every academic life when the level of responsibility becomes terrifying. In my five years at *Science Advances*, first as an associate and then as a deputy editor, there was always a benevolent superpower at the top – it had never intervened but its existence created a peace of mind. Suddenly, the superpower emails and puts you in charge. “Relax, nobody is ever ready. If academics were trained to lead, I would not have a job,” – our Editor-in-Chief has a high signal-to-noise ratio; that one phrase, in a late-night Zoom call across the Atlantic, quelled my panic at being asked to look after the huge Physical and Materials Science section at *Science Advances*: 11 deputy editors (DEs) and 85 associate editors (AEs), all of them stronger scientists than I am. An intake of breath, a careful read through the responsibilities, an update to the calendar – all right, let’s do it. “Good,” – the Editorial Office said – “would you now please write a column explaining your vision for the Physical and Materials Science section to our readership?”

Well now, folks – I am not some clueless government agency to presume to decide what’s important. Just send us that manuscript, in any reasonable format! Write it well though, this is a magazine. Beyond mere technical correctness, appeal to human curiosity and the sense of rigorous beauty. Scientific elegance is a haunting, irresistible thing; the one question we have always asked is “If I saw this anywhere else, would I have dropped what I was doing and read it?” Beyond that, reviewers are your judges.

Here’s what happens when we receive your paper, one of the 20,000+ we get per year on subjects ranging from astronomy to zoology. Our valiant journal office in Washington, DC checks it for completeness (1-2 days) and asks a deputy editor for an initial evaluation (1-3 days). By current statistics, three quarters of papers are judged unlikely to survive peer review and rejected; one quarter

goes to specialist AEs who can either reject (1-3 days) or invite reviewers (1-3 weeks). DEs, AEs, and reviewers filter out 90% of the manuscripts; the remaining 10% are published. Our target timeframes are very short – we do not want to waste your time. This, if anything, is my vision for the Physical and Materials Sciences section at *Science Advances*: justice and efficiency.

Our editors are scientists themselves; we’ve been in the trenches and do not expect anything to be perfect. The academic system in general is not a circle of virtue or gratitude – it is a circle of forgiveness: you look at some omnishambles juniors have made and think “ah, well... at their age, I was worse.” And you forgive them, and fix the mess, and life goes on. It is the same in publishing. That said, one pet peeve is academic marketing, particularly in my own research area. For goodness’ sake, people. Renaming free radicals and ion clusters into “molecular qubits” would only make editors, then reviewers, and then readers roll their eyes. Calling a forbidden transition “quantum tunneling,” renaming ENDOR into “nuclear quantum memory,” referring to drift Hamiltonians as “quantum wind” – you run a serious risk of your own students pointing and laughing a few years down the line. Please stop; we would still evaluate your paper on merits even if you modestly call your two-level system a spin – and readability would much improve.

In summary, business as usual. Scientific excellence is the sole criterion, expedience is a priority, and beauty is an aspiration. When, a million years from now, the archaeologists finally crack the secret of the PDF, let’s give them something to read.

– Ilya Kuprov

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