# Editorial: False erudition

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There is no reason to cite obscure papers published a century ago or earlier, in the absence of a historical narrative essential to the reporting of novel techniques and/or results in a manuscript. For instance, in a manuscript devoted to the determination of the effective constitutive parameters of a composite material comprising silver nanospheres dispersed in a host polymer, a good reason to cite an 1806 paper of Arago and Biot [J.–B. Biot and F. Arago, "Mémoire sur les affinités des corps pour la lumière et particulièrement sur les forces réfringentes des différents gaz," *Mém. Inst. Fr.* **7**, 301–385 (1806)] in the 21st century is unlikely. The Arago-Biot formula deduced experimentally in that paper has been of only incidental interest for more than a hundred years now. Most researchers have never read that paper, which will be difficult to understand today even by speakers of the French language, at the very least because scientific nomenclature has changed vastly over 200 years. Often, in a journal which requires complete citations, you will notice this paper cited as follows: J.–B. Biot and F. Arago, *Mém. Inst. Fr.* **7**, 301 (1806). That abbreviated citation indicates that the authors did not even look at the 1806 paper, much less read it.

My favorite example of false erudition involves a paper of more recent vintage: D. A. G. Bruggeman, "Berechnung verschiedener physikalischer Konstanten von Substanzen. I. Dielektrizitätskonstanten und Leitfähgkeiten der Mischkörper aus isotropen Substanzen," *Ann. Phys. Lpz.* **24**, 636-679 (1935). There are good reasons to cite this paper in manuscripts seventy years after its publication. Although written in German, its mathematical content is accessible to those who do not know that language.

You may see the last page number of Bruggeman's paper written as 664, not 679, in many citations. This paper was published in two consecutive issues of *Annalen der Physik* (Leipzig). The first contained pages numbered up to 664, and the remaining 15 pages of the paper were published in the next issue. If you have not held the bound volume in your hands, you would not know that. But once someone published a citation with the wrong last-page number, others merely copied the citation. That practice continues to flourish.

Another indicator of false erudition may be the bunching of a large number—say, in excess of 20—of references in the introductory section of a manuscript, particularly when those references are of marginal relevance to the work reported therein. Consider, for instance, the citation of 20 or more references on the so-called invisibility cloaks in just one sentence in a


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manuscript devoted to the fabrication of a thin film that purportedly has *a* refractive index with a negative real part in some frequency range. One or two references, perhaps to review papers, would have sufficed. But the inclusion of a large number of references shows that either the authors wish to impress the reader with their thorough knowledge of a currently fashionable area or the authors do not have a sense of discriminating what is directly relevant to their work and what is not. There may, of course, be the chance that the authors do not wish to offend any potential reviewer of their manuscript by not citing their paper(s).

Scientific and technical manuscripts intended for publication in technoscientific journals must be written simply. Deviations from simplicity compromise the directness of communication. False erudition is an undesirable deviation, as it can lead a reader to chase after red herrings.