

## Manuscript Titles: How to Capture Readers and Enhance Citations

Cite This: *ACS Appl. Nano Mater.* 2020, 3, 3962–3963

Read Online

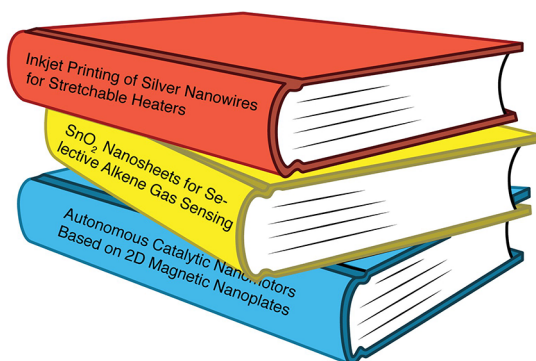
ACCESS |



Metrics &amp; More



Article Recommendations



Writing a scientific manuscript—still the primary route by which research is disseminated to the broader community—requires extreme attention to ensure that results are reported both fully and concisely. During manuscript preparation, it is all too easy to focus on specific details: a compelling Introduction that succinctly identifies the open question motivating the manuscript, a carefully written Experimental Section, with protocols reported to ensure reproducibility, excellent graphics (see DOI: 10.1021/jz500997e and DOI: 10.1021/acs.chemmater.6b00306) that convey the data clearly, precisely, and efficiently, and a thoughtful Results and Discussion section that accurately describes and contextualizes the work. With such laser-like focus, it is easy to forget that potential readers first encounter a paper without closely examining its details. Instead, they read the title and probably glance at the Table of Contents graphic. Thus, the title stands as the most important tool for drawing the reader to a paper!

Here, we offer insight into how to generate useful titles that are suggested for submissions to ACS journals and specifically to *ACS Applied Nano Materials* (ACS ANM). We list several pitfalls that plague poor titles, critically reexamine the title of one of our own published papers with an eye toward improvement, and highlight titles from ACS ANM's first 2 years that we think excellently capture the pertinent content of the paper.

Many manuscripts are submitted to ACS ANM with titles that fail to capture adequately the key innovation of the proposed work. Common flaws in titles include the following:

(a) *Too long.* Papers with short titles are more cited than those with long titles: see DOI: 10.1098/rsos.150266 and DOI: 10.1126/science.aad1669.

(b) *Too detailed.* Authors often want to include every advance or innovation within the title, but they might be better served by selecting one or two features of their paper to highlight. It is impossible to capture every aspect of a

manuscript within a brief title! Many journals in recent years (including ACS ANM) have introduced keywords as a way to highlight additional features of a paper. We recommend that authors judiciously select keywords, especially those that do not appear in their title, to appeal to a broader audience.

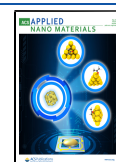
(c) *Poorly representative of the content.* Sometimes authors select titles with an eye to wider field trends rather than to a manuscript's specific content in an effort to increase the readership. Such titles are easily spotted, and the corresponding manuscripts are often rejected. One (hypothetical) example: The Conrad group has examined how the molecular-weight distribution in polymer brushes affects their ability to release adherent bacteria in research that specifically involves antifouling applications. Using the words “controlled release”, a phrase that is widely employed in the context of drug delivery, would be a misleading way to describe these results.

(d) *Specific to the ACS Applied Materials family of journals: No clear application.* The ACS Applied Materials journals are focused on applications; the journal family is committed to publishing cutting-edge work in materials science that is applications-driven, complementing existing journals within the ACS that center more on fundamental science. The ACS ANM introductory Editorial (DOI: 10.1021/acsanm.8b00027) states clearly that the targeted application should feature prominently in the title, yet authors often neglect this explicit instruction. *Specific to ACS ANM, we require two essential features in a title: the nanomaterial studied and its targeted application. Everything else is typically superfluous.*

Conversely, what makes a good title for a manuscript? A good title highlights the manuscript's focus and novelty (see DOI: 10.1021/cm500170v) and is short and to the point. In conjunction with the keywords (limited to 4–6 for ACS ANM), the title should enable potentially interested readers to locate the paper.

Of course, it is easier to highlight pitfalls than it is to craft a good title. Thus, we next critically examine one of our own paper titles and discuss how we would revise it to follow our suggestions. In 2015, Conrad published her first paper with *ACS Applied Materials and Interfaces* titled “Detection of Viruses By Counting Single Fluorescent Genetically Biotiny-

Published: May 8, 2020



lated Reporter Immunophage Using a Lateral Flow Assay” (DOI: 10.1021/am5082556). This cumbersome title is a mouthful!

What are the critical pieces of information that need to be conveyed in our title? To identify this information, it is helpful to summarize briefly the operation of a lateral flow assay, the application focus of this paper. In a lateral flow assay, reporter particles functionalized with antibodies to an analyte of interest are flowed through a porous membrane strip. In solution, the reporter particles bind to the analyte; this reporter–analyte complex is subsequently captured by antibodies on the strip. The particles generate a signal that is used to detect the analyte.

Our paper reported a variant on the lateral flow assay with two key innovations. First, as novel reporter particles, we used engineered bacteriophage, viruses that infect bacteria. Second, we used a novel detection method that applied image processing algorithms to enumerate individual reporters bound to the membrane strip. This combination reduced the limit of detection for a model virus by 100-fold over conventional lateral flow assays.

What words in this title are extraneous to the paper’s message?

(a) *Fluorescence*: Although we used fluorescence microscopy, similar image processing algorithms could be used to segment, for example, images of phage in bright-field micrographs and/or phage labeled with phosphors or chemiluminescent molecules.

(b) *Genetically biotinylated*: The phage that we used in this study were engineered to express a biotin-bearing peptide. This strategy is convenient from a biotechnological standpoint because streptavidin-functionalized recognition elements can be readily attached, but other strategies to attach recognition elements are possible.

(c) *Immuno*: This modifier was meant to indicate that phage were functionalized with antibodies. The word “immunophage”, however, is more commonly used in the context of interactions of phage-based therapies with the immune system (see DOI: 10.1016/j.chom.2017.06.018).

In retrospect, a shorter and more compelling title would eliminate the unnecessary words: “Detection of Viruses by Counting Single Reporter Phage Using a Lateral Flow Assay”.

Finally, we highlight examples of titles from articles in ACS ANM that successfully capture the elusive balance between brevity and completeness.

Example 1: [Inkjet Printing of Silver Nanowires for Stretchable Heaters](#)

Example 2: [Fluorine-Doped Cationic Carbon Dots for Efficient Gene Delivery](#)

Example 3: [Poly\(1-vinyladamantane\) as a Template for Nanodiamond Synthesis](#)

Example 4: [Ammonia Borane Nanospheres for Hydrogen Storage](#)

Example 5: [Autonomous Catalytic Nanomotors Based on 2D Magnetic Nanoplates](#)

Example 6: [Silver-Nanoparticle-Mediated Therapies in the Treatment of Pancreatic Cancer](#)

Example 7: [SnO<sub>2</sub> Nanosheets for Selective Alkene Gas Sensing](#)

Example 8: [Porous MoO<sub>3</sub>/SnO<sub>2</sub> Nanoflakes with n–n Junctions for Sensing H<sub>2</sub>S](#)

Example 9: [Pseudocapacitive Storage in Nanolayered Ti<sub>2</sub>NT<sub>x</sub> MXene Using Mg-Ion Electrolyte](#)

Example 10: [Interpenetrating Nanofibrous Composite Membranes for Water Purification](#)

We hope that this Editorial will inspire authors to craft their titles with the same degree of care that they apply to other aspects of their manuscripts.

Jacinta C. Conrad, Associate Editor

T. Randall Lee, Deputy Editor

## ■ AUTHOR INFORMATION

Complete contact information is available at:

<https://pubs.acs.org/10.1021/acsanm.0c01089>

## Notes

Views expressed in this editorial are those of the authors and not necessarily the views of the ACS.