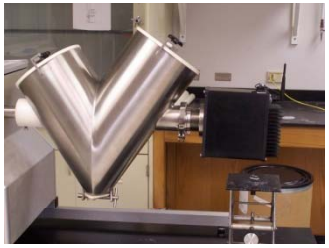
A Writing Coach Becomes a Listener

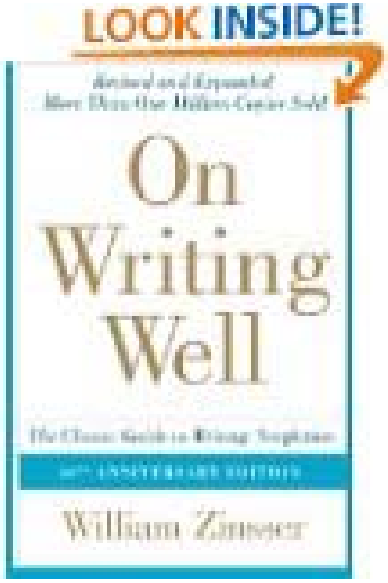
The New York Times

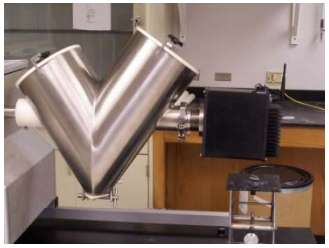
- “The written word looms over William Zinsser. The many hundreds of books in his Upper East Side apartment stand at attention, as if awaiting instruction from this slight man in a baseball cap and sunglasses who, for a half-century, has coached others on how to write.
- “In newsrooms, publishing houses and wherever the labor centers on honing sentences and paragraphs, you are almost certain to find among the reference works a classic guide to nonfiction writing called “On Writing Well,” by Mr. Zinsser. Sometimes all you have to say is: Hand me the Zinsser.”

A Writing Coach Becomes a Listener, by Dan Barry, The New York Times, by Dan Barry, April 28, 2013.

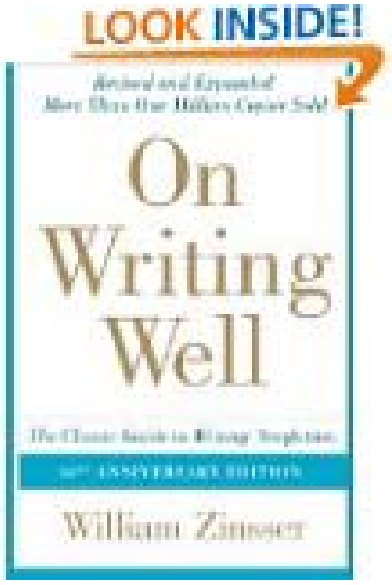


- “The book, first published in 1976, grew out of a writing course that Mr. Zinsser taught for several years at Yale University. And he is still teaching at 90, holding one-on-one counseling sessions for accomplished and aspiring writers at a round wooden table close to those bookshelves. The only difference is that he can no longer see..”

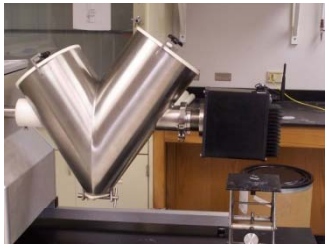




"Clear thinking becomes clear writing; one can't exist without the other. Its impossible for a muddy thinker to write good English."



On Writing Well, William Zinsser, The Classic Guide to Writing Nonfiction, page 8



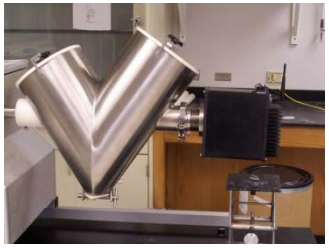
Clear Thinking Becomes Clear Writing

Rodolfo J. Romañach, Ph.D.
Analytical & Pharmaceutical Lab
Department of Chemistry

April 24, 2014

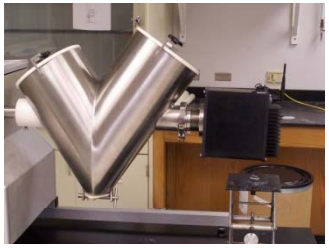
Department of Chemical Engineering
Seminar

Analytical & Pharmaceutical Lab, UPR-Mayagüez



Clear Thinking Becomes Clear Writing

1. Eliminate clutter to provide a clear message. -- Craft
2. Think about your message, what do you want to say? Maintain the focus on your contributions, not the clutter. – Creation.
3. Context – making previous publications work for you – creation.
4. Sequence – Creation.
5. Figures and clarity. – Creation



Clutter

- “Clutter is the laborious phrase that has pushed out the short word that means the same thing.”
- “Clutter is the official language used by corporations and government to hide their mistakes.”

• “There’s continuing ground for serious concern and the situation remains serious. The longer it remains serious, the more ground there is for serious concern”. Caspar Weinberger – US Secretary of Defense in 1984.

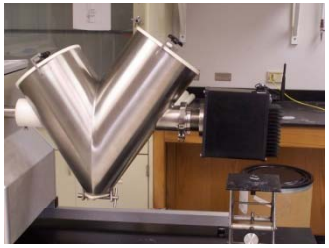
•“At the present time we are experiencing precipitation”.

•“An unidentified flying apparatus was observed in the pharmaceutical packaging area”.

•“The timing apparatus is not currently working.”

• “Microchemical analysis showed that the dibasic calcium phosphate sample contained a carbonaceous impurity.”

• “The company implemented a rightsizing effort throughout the year”.

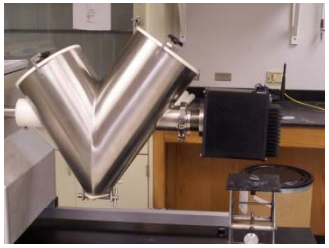


Clutter

“Omit empty phrases such as:

- As already stated
- It has been found
- It has long been known that
- It is interesting to note that
- It is worth mentioning at this point
- It may be said that
- It was demonstrated that

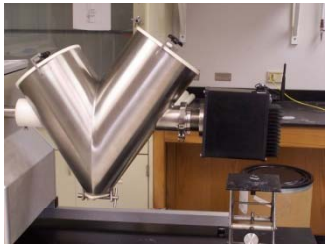
ACS Style Guide, 2006, page 54.



We need to communicate

Research Manuscript

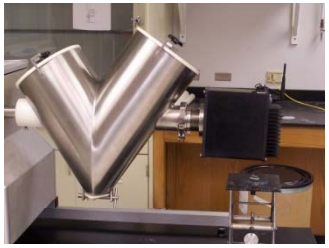
- How science was advanced.
- How the experiments were performed, permitting their repetition.
- The results obtained and how they were interpreted.
- Conclusions



We need to communicate

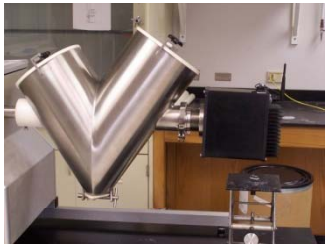
Research Proposals for Impatient & busy Reviewers

- Convince that science will be advanced and scientists trained if **we** receive funding. Describe current state and the progress that will be made after receiving funding.
- Convince that you are ready to do research (knowledge, facilities & equipment, personnel).
- Convince that the value that you will provide is far greater than the cost.
- Follow strict formats and convince that regulations will be followed.



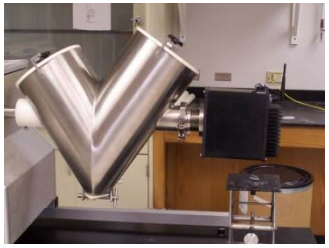
Simplicity – Strip Every Sentence to its Cleanest Components

- The temperature control is important in order to maintain the system isothermally.
- The temperature control is important [in order] to maintain the system isothermally.
- The temperature was maintained at 30^{o}C using a……. control.



Simplicity – Strip the sentence to its barest components.

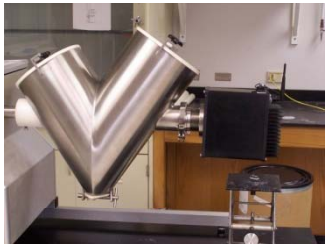
- “As can be seen, the three spectra exhibited an identical profile (i.e., no difference in chemical composition between samples was apparent); however, the spectra were shifted by effect of differences in physical properties between samples”
- “[As can be seen], the three spectra exhibited an identical profile [(i.e., no difference in chemical composition between samples was apparent)]; however, the spectra were shifted by effect of differences in physical properties between samples”
- Alternative: Figure # shows three spectra that differ only in baseline. The change in baseline is caused by differences in the physical properties of the samples.



Simple Declarative Sentences

- “Short, simple *declarative sentences—that is, sentences that make statements,* rather than pose questions, issue commands, or exclaim—are the easiest to write and the easiest to read.”
- “Why use DoE? DoE has been extensively used in the design of processes in order to understand the effects of multiple interactions of parameters on the quality of the …..
- The powder mixtures were prepared following a D-optimal design ……

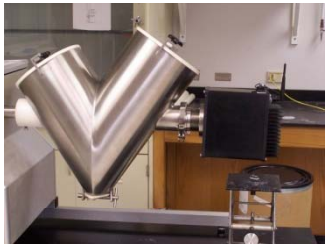
ACS Style Guide, 3rd Edition, page 41



Verbs

- “Joe saw him” vs. “He was seen by Joe”
- “Don’t say the president of the company stepped down. Did he resign? Did he retire? Did he get fired?” Need to provide the exact meaning.
- “Verbs are the most important of all your tools. They push a sentence forward and give it momentum.”

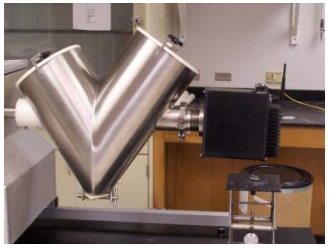
Zinsser Pages 67 - 68



Verbs

- “A sentence is said to be in *active voice when the subject of the sentence is the* doer of the action indicated by the verb. The subject of an active verb is doing the action of the verb. In *passive voice, the subject is the receiver of the action* indicated by the verb.”
- “Use the active voice when it is less wordy and more direct than the passive.”
- “Joe saw him”

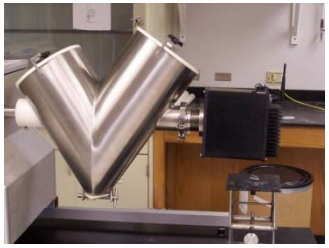
ACS Style Guide, 2006, page 42.



Verbs

- **Poor Writing:** The fact that such processes are under strict stereoelectronic control is demonstrated by our work in this area.
- **Better:** Our work in this area demonstrates that such processes are under strict stereoelectronic control. (see page 42, ACS Style Guide, 3rd Edition.
- **Much Better:** Recent studies in this area show that such processes are under strict stereoelectronic control (refs).

ACS Style Guide, 3rd Edition

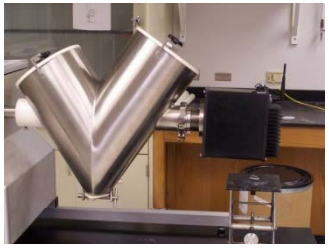


Be Careful with Words, Visit Webster Dictionary

- Near infrared (NIR) spectroscopy has been extensively used for monitoring batch processes [5-8], but this work pretends to ….
- This may sound ok but pretends means:

1. to give a false appearance of being, possessing, or performing <does not *pretend* to be a psychiatrist>
2. **a :** to make believe **:** FEIGN <he *pretended* deafness>

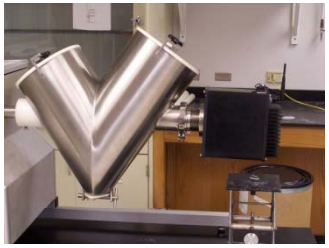
- **b :** to claim, represent, or assert falsely <*pretending* an emotion he could not really feel>
- Pretending is acceptable in science fiction and in a novel but not in scientific writing.



How to Improve

- Write your message, write the scientific advancement, write it for yourself.
- Use [ ] to emphasize un-necessary words.
- Accept that writing requires a lot of hard work. Accept that you will need a number of revisions to clearly express your contribution.
- Learn to be your own critic, demand improvements from yourself. Review prior revisions, try to avoid repeating mistakes.
- Choose one or more well written papers that become your role models. Learn from the masters.

This is the craft – that requires a lot of work, but becomes much easier as it is practiced.

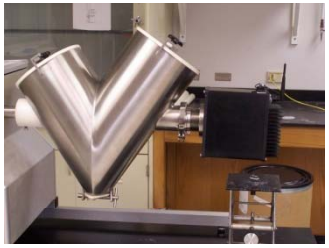


Mastering the Craft

The writer must therefore constantly ask himself: What am I trying to say? ~~in this sentence?~~ Surprisingly often, he doesn't know. ~~And~~ Then he must look at what he has ~~just~~ written and ask: Have I said it? Is it clear to someone ~~who is coming upon~~ encountering the subject for the first time? If it's not ~~clear,~~ it is because some fuzz has worked its way into the machinery. The clear writer is a person ~~who is~~ clear-headed enough to see this stuff for what it is: fuzz.

I don't mean ~~to suggest~~ that some people are born clear-headed and are therefore natural writers, whereas ~~other people~~ others are naturally fuzzy and will ~~therefore~~ never write well. Thinking clearly is ~~an entirely~~ a conscious act that the writer must ~~keep forcing~~ force upon himself, just as if he were ~~starting out~~ embarking on any other ~~kind of~~ project that ~~calls for~~ required logic: adding up a laundry list or doing an algebra problem ~~or playing chess.~~ Good writing doesn't ~~just~~ come naturally, though most people obviously think ~~it's as easy as walking.~~ it does. The professional

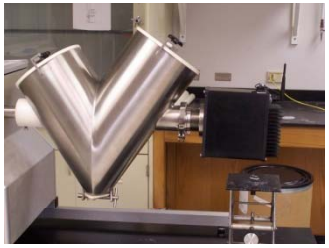
Zinsser Pages 10 -11



Master the Craft

- “First, work hard to master the tools. Simplify, prune and strive to order. Think of this as a mechanical act, and soon your sentences will become cleaner. The act will never become as mechanical as, say, shaving or shampooing, you will always have to think about the various ways in which the tools can be used, but at least your sentences will be grounded in solid principles, and your chances of losing the reader will be smaller.”

- “Now that I have corrected the English, maybe we can focus on the science.”

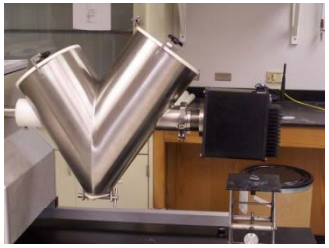


Chapter 5- The Audience
Modifying for Technical Writing

- “Think of the other as a creative act: the act of expressing who you are. Relax and say what you want to say. And since style is who you are, you only need to be true to yourself to find it gradually emerging from under the clutter and debris, growing more distinctive every day.” page 25

Applying to scientific writing

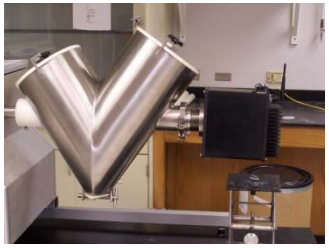
- Think of the other as a creative act: the act of expressing the advancements in science and technology that resulted from your research. Relax and focus on communicating the advancements. You only need to be true to science to find it gradually emerging from under the clutter and debris, growing more distinctive every day.



Think your contributions and maintain the focus on them

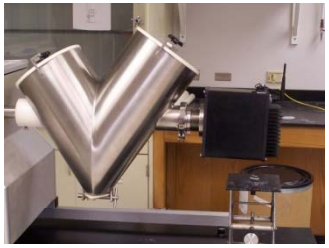
- What is your contribution?
- How you have advanced science?
- What is your advancement relative to previous works?

Craft & Creation



Make previous works work for you - Think your contributions and maintain the focus on them.

- "Taylor has used Raman spectroscopy to probe polymorphic conversions that occur during wet granulation and lyophilization, and has also studied the deliquescence of sucrose. [35 -37]"
- "The acquisition of the NIR-CI system will also increase collaborations with Taylor who has developed analytical methods for the fundamental understanding of water-solid interactions and disordered systems [32 - 34]. **Taylor has used Raman spectroscopy to probe polymorphic conversions that occur during wet granulation and lyophilization, and has also studied the deliquescence of sucrose.** **[35 -37]** NIR-CI could be used in future collaborations to probe differences in the hydration of materials under study, and study the water uptake of various drugs and important pharmaceutical excipients."



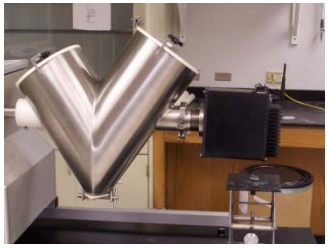
Make previous works work for you - Think your contributions and maintain the focus on them. Writing for an Impatient Reviewer.

- The properties of ----- nanoparticles have been extensively studied, but their magnetic properties are not characterized.

  Reviewer sees no need for additional research

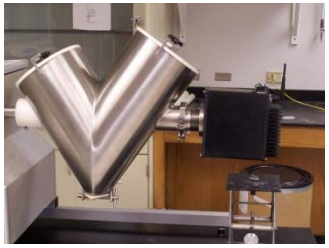
- The magnetic properties of – nanoparticles are not characterized.

  Accepted proposal



Make previous works work for you - Think your contributions and maintain the focus on them.

- You need previous work to explain your contributions.
- Your reviewers are likely the author(s) of some of these previous works.
- Comment from reviewer #2 “p2 lines 40-45 - The listed articles talk about generalities and importance, however, it is limited or not given a examples of direct application in a "real" situation such as a complex matrix. Therefore it is encouraged that the authors take into account the following references:”



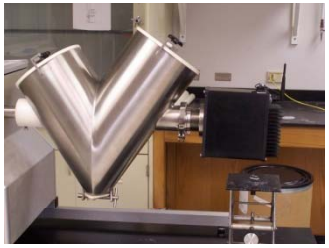
Learning from the Arts

- “Criticism is a serious intellectual act. It tries to evaluate serious works of art and to place them in the context of what has been done before in that medium or by that artist.”

“context of what has been done before …”

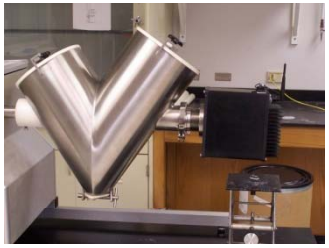
- “Therefore if you want to be a critic; steep yourself in the literature of the medium you hope to make your own specialty.”
- Need to read the papers of those who have worked in your field before and you need to evaluate them before you can write your research paper.

W. Zinsser, On Writing Well, page 197



Sequence

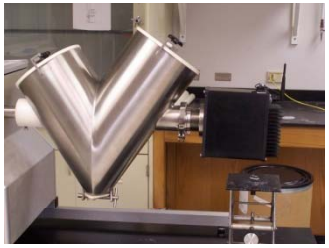
- Sequence – the order in which the work was done is very important.
- What was done first, what was done later.
- Your work cannot be followed if the sequence is not described first.



Sequence - Experimental Section

- Materials
- Powder Blends
- Spectral Acquisition
- Methods for spectral evaluation.

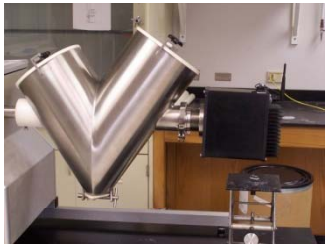
- Materials
- Synthesis
- Spectroscopic Characterization



Sequence

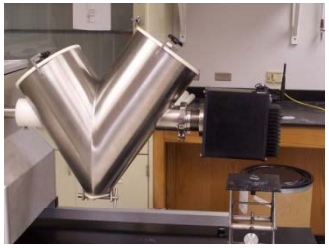
- The most important sentence in any article is the first one. If it does not induce the reader to proceed to the second sentence your article is dead.
- The lead sentence may vary according to the field, but keep in mind: “Readers want to know- very soon- what’s in for them.”
- “Continue to build. Every paragraph should amplify the one that preceded it. Give more thought to adding solid detail and less to entertaining the reader. But take special care with the last sentence of each paragraph-it’s the crucial springboard to the next paragraph.”

Pages 54 - 55



Sequence - Don’t Make it Difficult for Reader

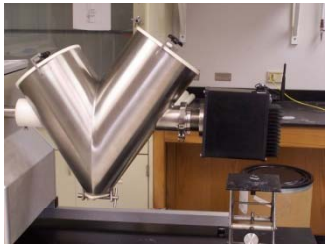
- “Using this variable, the blending end-point was monitored and determined as described in section *2.2.3* , focusing on the chemical composition of the blend.”
- Don’t expect the reader to stop reading and then go back to another part of the manuscript to understand and then come back.



Sequential Writing

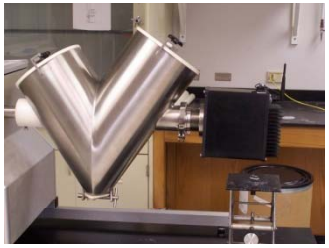
- Zinsser believes that science and technology requires sequential writing where the reader must be escorted from one idea or result to the other. We need to help the reader follow “our train of thought”.
- He teaches sequential writing by asking that students write about how something works.

W. Zinsser, On Writing Well, page 159 - 160



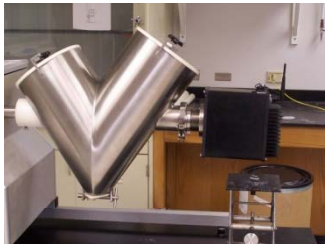
High Quality Figures

- Journals are demanding high quality figures.
- You need to use a specialized program for these figures. Origin is a good example. Figures need to be .tiff quality.
- Usually a maximum of 10 figures per article.



Figures

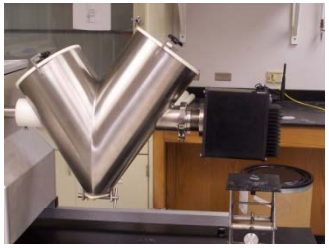
- Do the figures help you tell your story?
- Do they help present your experimental set up and clearly explain your results?
- Do they help the reader understand the sequence of experiments that you performed?
- Do they help the reader follow your “train of thought”?



Avoiding Clutter in Figures

obtained at pH 5.2. Supersaturation appears to have a greater effect on crystal size at the higher pH values (pH 4.8 and 5.2). Here size appears to increase with supersaturation, whereas this trend is suppressed at the lower pH values (pH 4.0 and 4.6). This figure also gives an indication of the effect of temperature, showing final crystal sizes at 18°C and 4°C. Data at 10°C were not included, to preserve the clarity of the figure. No clear trend with temperature was observed at any pH value. For pH 4.8 and 4°C, four individual wells were chosen (two wells on each of two separate plates), and the size of every crystal in the well was measured. The details of this analysis are included in Table 2. The average variation from the mean size (based on 95% confidence limits) was found to be ±8%.

R.A. Judge, R.S. Jacobs, T. Frazier, E.H. Snell, M.L. Pusey, Biophysical Journal, 1999, 77, 1585 – 1593.



"Data at 10°C were not included, to preserve the clarity of the figure."

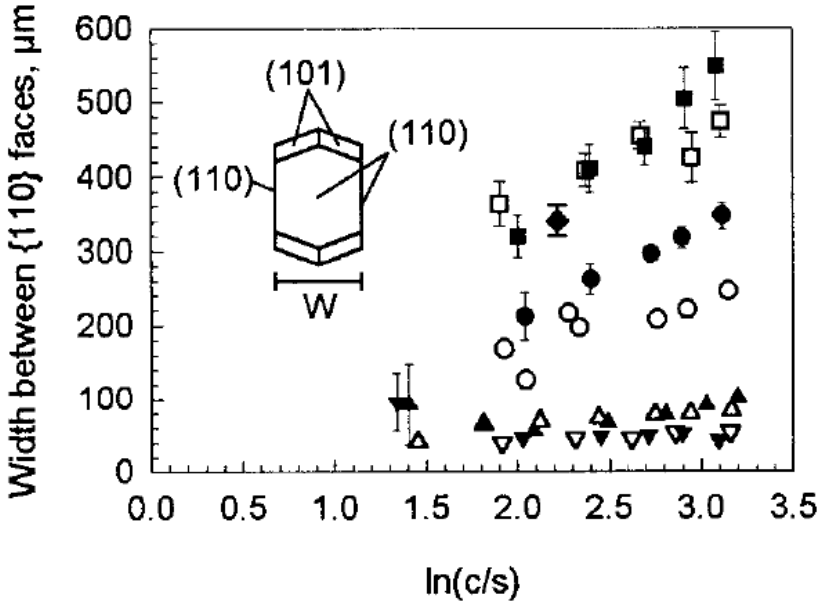
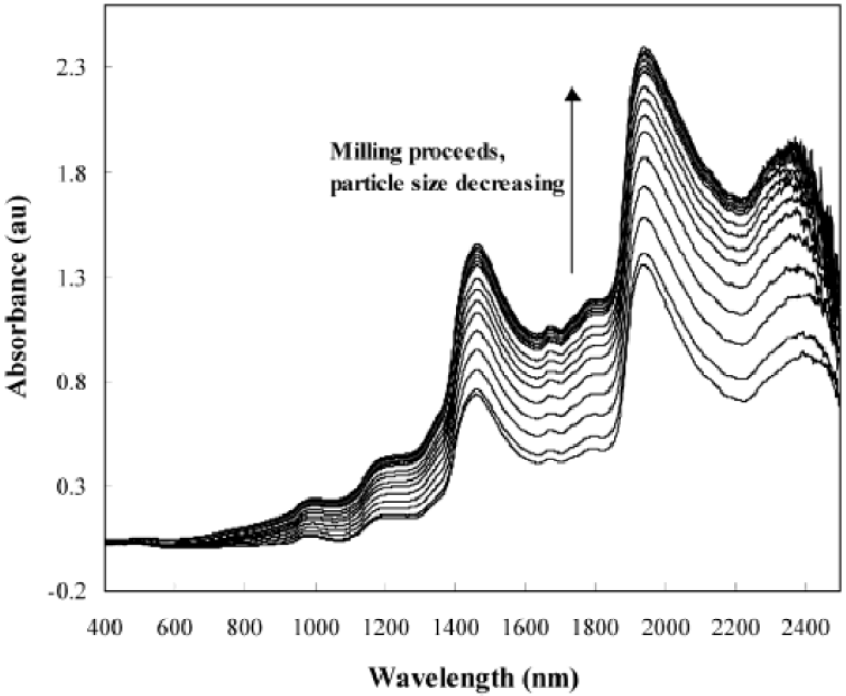


FIGURE 5 The effect of pH and temperature on final crystal size (W), defined as the distance between parallel {110} faces. Symbols: at pH 5.2, 18°C (■) and 4°C (□); at pH 4.8, 18°C (●) and 4°C (○); at pH 4.6, 18°C (▲) and 4°C (△); at pH 4.0, 18°C (▼) and 4°C (▽). ♦, The pseudo-batch crystal size at pH 5.2, 18°C, $\ln(c/s) = 2.2$.

R.A. Judge, R.S. Jacobs, T. Frazier, E.H. Snell, M.L. Pusey, Biophysical Journal, 1999, 77, 1585 – 1593.

Measurement of particle size in suspensions through NIR spectroscopy



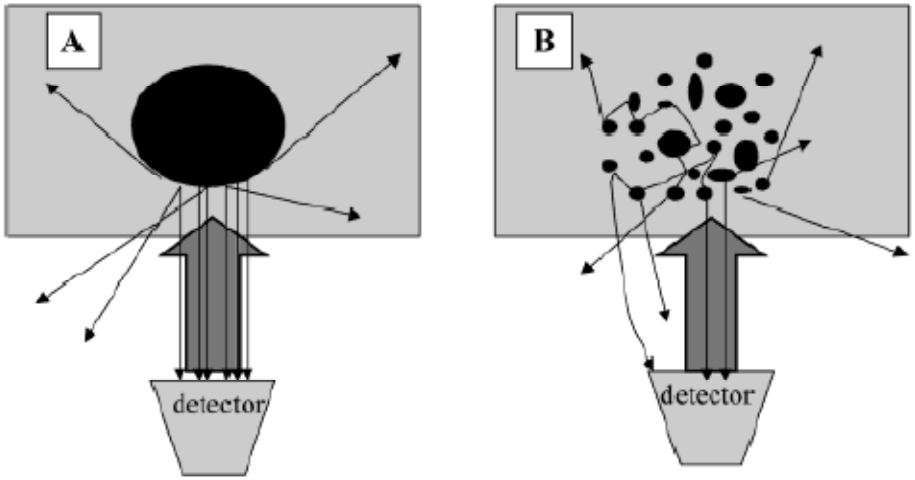


Figure 6. Schematic of light scattering by particles near the (A) beginning and (B) endpoint of the media milling process.

Analytical Chemistry, 2003, 75, 1777 – 1785.

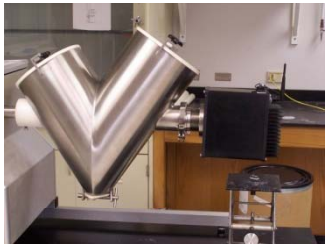
Context- Justification

Various laboratory-based analytical techniques exist for measuring the particle size distributions of submicrometer particles. These methods can be broadly classified as methods based on light interaction, electrical property sizing, separation-based methods, and microscopy-based methods. Particle sizing methods based on separation include field flow fractionation (FFF), hydrodynamic chromatography (HDC), disk centrifugation, and capillary hydrodynamic fractionation (CHDF). Electrical property sizing includes techniques such as electroacoustic spectroscopy. Microscopic methods include electron microscopies (TEM and SEM) and atomic force microscopy (AFM). Light interaction-based methods include ensemble methods, such as laser light scattering and photon correlation spectroscopy. In general, separation-based techniques are still in need of development for routine laboratory application. Each of the above techniques has advantages and disadvantages relative to the application and type of information being sought. Because of the availability of the equipment and the long historical application of the technique, laser light scattering often provides the benchmark laboratory-based method for determining the particle size distribution of drug substances during the media milling process.[7]

All of the methods described above are generally conducted off-line, usually in a laboratory setting which is physically separated from the manufacturing environment. Significant disadvantages to off-line measurements of particle size distributions of this sample type include nonrepresentative sample collection, errors introduced by sample dilution, sample inhomogeneities, labor-intensive analysis, and the inherent time delay that is a characteristic of off-line analytical methods. Sample inhomogeneities can arise from settling or agglomeration of the nanoparticles, which leads to changes in density. These difficulties can be further exacerbated if a sample dilution step is required, as is the case when analyzing suspensions of particles with high solids content using laser light scattering.

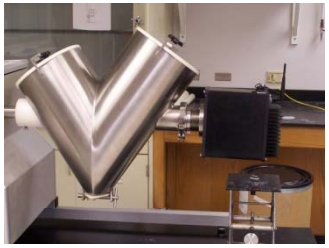
In the case of media milling, obtaining a representative sample of the drug suspension provides a significant challenge as a result of the physical properties of the colloidal dispersion. In addition to the issues that need to be addressed with the use of off-line particle size analysis, there is a significant need to have real-time, on-line analysis to provide monitoring and control capabilities of the media milling process. The process must be terminated at the appropriate time while ensuring that the particle size of the drug particles has been reduced to a target size without unnecessary extension of processing. Milling beyond the required time to achieve the specified particle size distribution leads to inefficiency of the overall process and unnecessary expenditure of energy by the instrumentation. It will be shown that the on-line near-IR method described in this report can effectively overcome the aforementioned difficulties to provide real-time process data while overcoming the many difficulties of analyzing high-solids content dispersions.

Analytical & Pharmaceut



The Ending

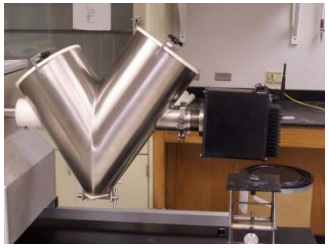
- “knowing when to end an article is far more important than writers realize. You should give as much thought to choosing your last sentence as you did to the first. Well, almost as much.”
- “If your readers have stuck with you from the beginning, trailing you around blind corners and over bumpy terrain, surely they won’t leave when the end is in sight. Surely, they will, because the end that is in sight turns out to be a mirage” . (pages 62 – 63).
- “For the nonfiction writer, the simplest way of putting this into a rule is: when you’re ready to stop, stop. If you have presented all the facts and made the point you want to make, look for the nearest exit.” (pages 65- 66)

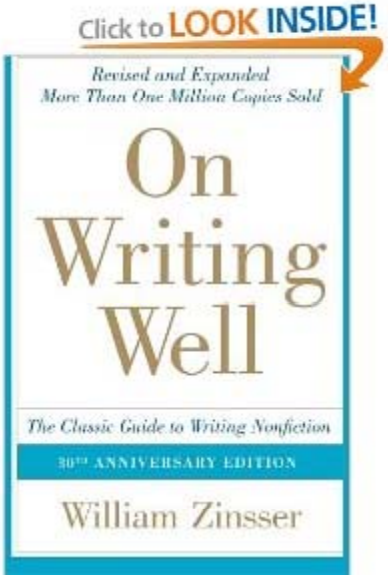


Learning from Memoirs

- “Again, the rule I suggest is: Make sure that every component in your memoir is doing useful work. Write about yourself, by all means, with confidence and pleasure. **But see that all the details – people, places, events, anectodes, ideas, emotions-are moving your story steadily along**.”
- For scientists: **Make sure that every observation, detail, spectrum, results are moving the reader to understand your contribution.**
- Avoid a research proposal that is excellent in discussing the importance of the field but hardly discusses the novel research idea.
- Avoid a paper that discusses the work done, but does not emphasize the innovation.

W. Zinsser, On Writing Well, page 134





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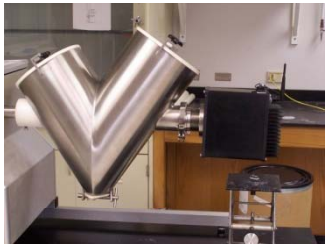
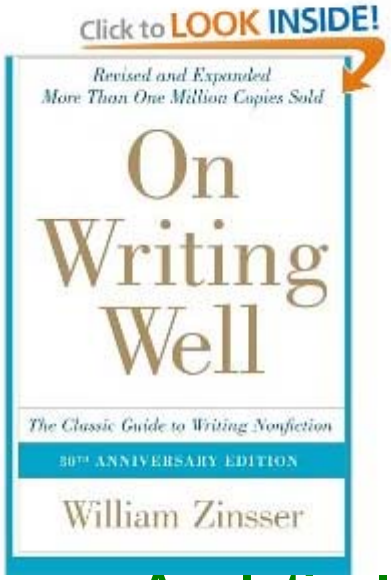


Zinsser's advice to the scientist

- "writing is not a special language owned by the English teacher. Writing is thinking on paper. Anyone who thinks clearly can write clearly, about anything at all. Science, demystified, is just another nonfiction subject. Writing, demystified is just another way for scientists to transmit what they know."



W. Zinsser, On Writing Well, page 159 - 160