



Society of Petroleum Engineers

# How to Write a Good Technical Paper



This work is licensed under a [Creative Commons Attribution – Non Commercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/)

# Objectives

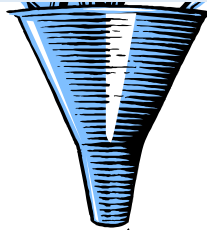
- Give tips for writing good abstracts
- Give tips for writing good papers
- Give tips for making good presentations
- Explain peer-review process



Scientific Knowledge  
Mathematics  
Ingenuity



**COMMUNICATION**



Presentation  
Documentation



# Who is Tayfun Babadagli?

- Author: Wrote SPE-93884-MS "Mature Field Development – A Review"
- Presenter: SPE Europec/EAGE Annual Conference, 13-16 June 2005, Madrid, Spain

**His paper has been downloaded almost  
6,000 times!**

**(one of the top 5 of all time)**



# Characteristics of a Great Paper

- Short, clear title
- Follows a standard outline
- Clear writing style
- Case History
- Good references
- State significant new information



# Once Unknown?

- Darcy, Mitchell, and Holditch
- “I am 100% certain that all of the awards and rewards that I have achieved in my career were a result of writing papers and presenting them at SPE meetings. It was the best advertisement possible for my consulting business”

-Steve Holditch, 2002 SPE President

Author of more than **70** papers



# Who Are You?

- Intelligent
- Knowledgeable
- Experienced
- Willing to share
- Company approval
- Something to say



# Why Write SPE Technical Papers?

- Longevity: Your paper extends beyond the conference
- Legacy: Preserves your work
- Exposure: Builds your peer network
- Prestige: Enhances your resume



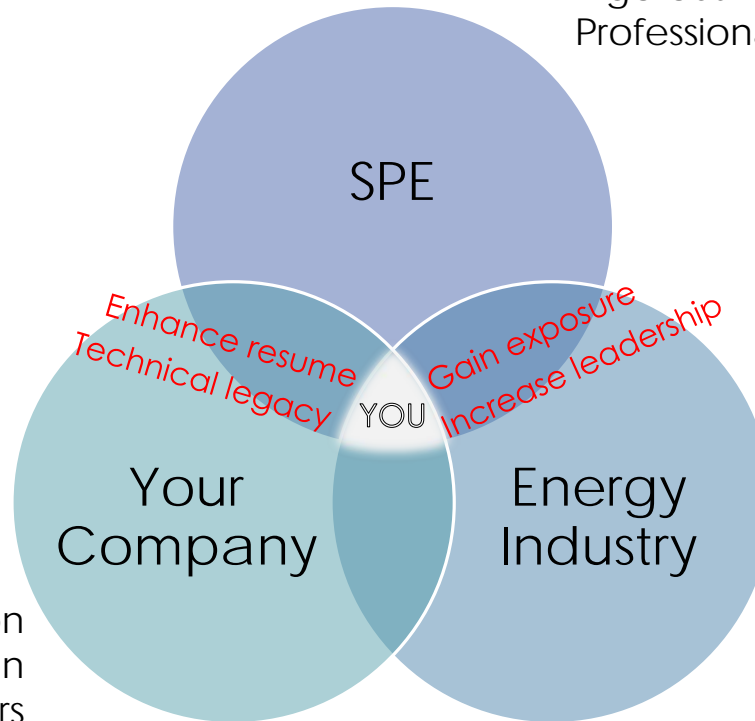


- The SPE Difference
  - Rigor: SPE meetings vs. commercially organized meetings
  - Prestige: SPE journals vs. commercial publications
  - Exposure: SPE's globally accessible, online library – OnePetro
  
- Professional obligation
  - Help others learn from your experience
  - Fulfill the SPE mission: to share and disseminate knowledge



# Who benefits?

Prestigious journals  
Rigorous meetings  
Professional excellence



Showcase innovation  
Enhance reputation  
Attract customers

Enhance reputation  
Increase knowledge  
Meet global needs

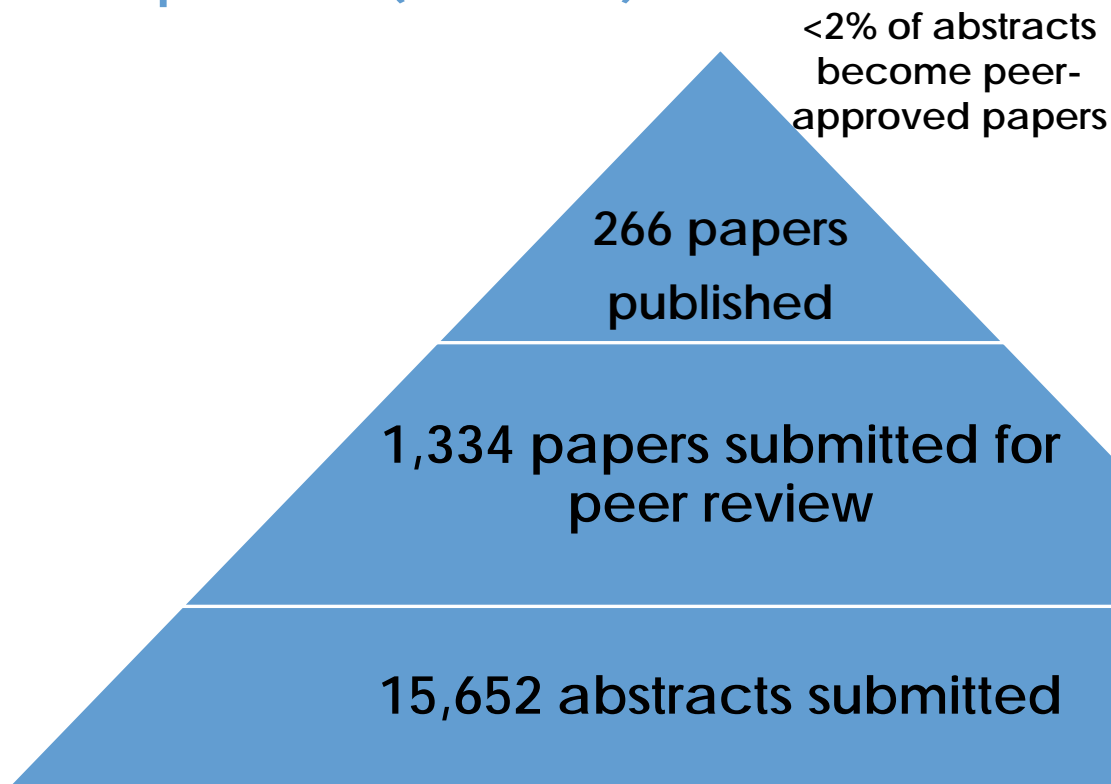


# *OnePetro* Statistics

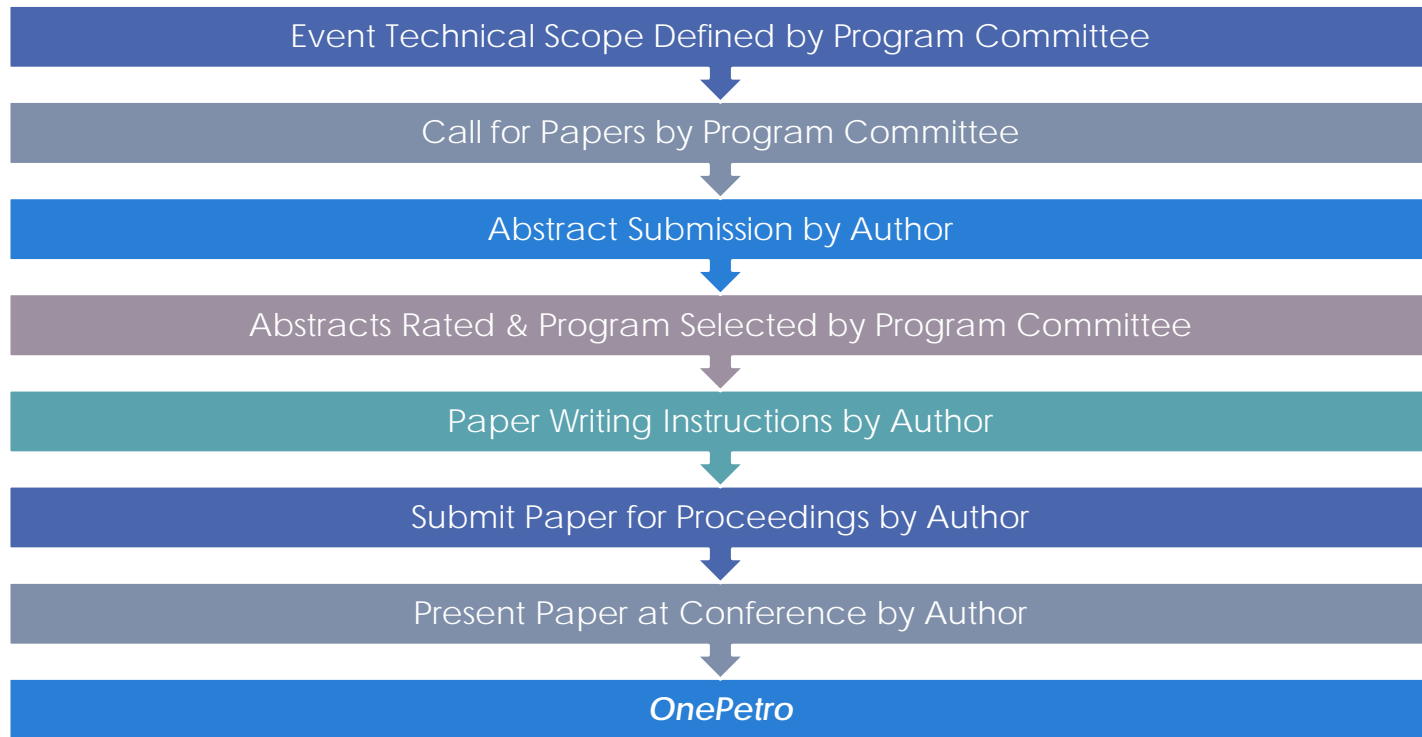
- Multi-society digital library (18 different publishers)
- >160,000 full length technical papers
- 85,000+ SPE papers
- >4 million SPE papers downloaded in 2013
- ~3,500 SPE papers added annually



# Exclusivity of SPE Journal Papers (2013)



# SPE Paper Path



# WRITING THE PAPER PROPOSAL (ABSTRACT)



# The Paper Abstract

- Clear, concise summary of paper topic
- Short – generally 350 words
- “What’s your bright idea?”
- Explain your paper uniqueness
- “It better be good”
- Your proposal has only one chance with the program committee



# Start With a Good Plan

- Relates to meeting scope
- Presents useful information
  - New interpretation of old topic/technology
  - New information or technology
- Explains methodology
- Technically sound
- Supports conclusions



Case histories more likely accepted





# Before You Start

- Ensure company approval
  - To write the paper
  - To travel to present the paper (if you are not there to present, your paper may be pulled from **OnePetro**)
- Survey existing literature
  - Related papers from **OnePetro**
  - Good references for your paper
- Meet your deadlines!!!
  - Be sure you'll have time to write paper if accepted
  - No paper = No podium



# A Good Abstract Has...

- Good title = short, direct, informative
- $\leq 350$  words
- Clear paper summary
- State significant new information
- Conclusions



# Improve Your Chances to Succeed: **DO's**

- Organize your thoughts
- Use simple sentences
- Use common terminology
- Proofread your proposal!!!
- Technically sound story
- Clearly demonstrate literature contribution



# Improve Your Chances to Succeed: **DON'Ts**

- Do not exceed word-count limitation
- No spelling or grammar errors
- Do not use run-on sentences
- No references allowed
- No figures/tables (except IPTC)
- No commercial sales pitch



# What is the committee looking for?

“Be concise yet descriptive, without trademarks or company names. For the program committee, being too commercial is the *kiss of death* – a paper will be kicked out quickly. Avoid judgment words like ‘new’ and ‘innovative’.”

Mario Zamora

M-I SWACO

Member of ATCE

Offshore Europe program committees



# Submitting Your Abstract

- SPE abstract submission process
  - Follow the instructions
  - Include names & emails of all co-authors
  - Indicate for e-poster consideration
- Submit online: follow link from event page or email
- For more instructions visit:  
[www.spe.org/authors](http://www.spe.org/authors)



# WRITING THE PAPER



# Getting Started

- Organize thoughts
- Review the SPE author kit
  - Resources and deadlines
  - Manuscript template provided
- Research existing literature
  - **OnePetro** is an excellent resource
  - Good references for your paper





# Author Kit

## Deadline Dates/Forms

All forms need to be completed in full and submitted by the due date listed below.

Form	Due Date	Submit to
<a href="#">Transfer of Copyright Form/Policy</a> (One form needs to be submitted from each author on the manuscript.)	30 September 2014	Please refer to your speaker notification email.
<a href="#">Paper Information Form</a> (Provides SPE with complete and current information for each author.)	30 September 2014	Please refer to your speaker notification email.
Manuscript	30 September 2014	Please refer to your speaker notification email.
PowerPoint Presentation	14 November 2014	Please refer to your PowerPoint submission email.
ePoster Presentation	14 November 2014	Please refer to your PowerPoint submission email.

## Templates

Manuscript Templates

(Zip file of A4- and Letter-size templates)

Technical Session Powerpoint Presentation Template

ePoster Powerpoint Presentation Template

## Manuscript Information

Manuscript Template Instructions

Preparing Your Manuscript



# Literature Survey

- Attraction
  - Read abstract & conclusions
  - Skim headings & graphics
- Content
  - Sufficient explanation of methods
  - Applicable to your situation
- Balance
  - Technical content
  - Writing quality



# Planning Your Paper

- What is your lesson learned?
- What do you want others to understand from your work?
- How does your work differ?
- What was useful from literature survey?
- Who is your audience?



# Remember Your Audience

- Identify your audience
  - Write for them!
- Basic audience needs
  - Problem: Why you conducted the project
  - Solution: What you contributed to the industry knowledge
  - Value: Why the audience should listen



# Basic Manuscript Outline

- Abstract
- Introduction
- Theory and definitions
- Equipment and/or processes
- Data and results
- Conclusions
- Acknowledgement
- References



# Adapting to Basic Outline

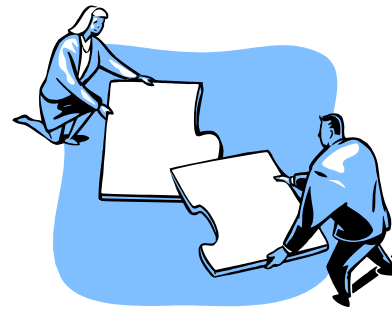
- Laboratory study – explain experimental methods, execution, and evaluation
- Field application – field data before & after application
- Simulation study – explain variables assumptions, and key factors



# Parts of a Quality Paper

There are many items that make up a quality paper.

- Title
- Authors
- Abstract
- Introduction
- Materials and Methods
- Figures and Tables
- Appendix
- References
- Nomenclature
- Acknowledgements
- Results
- Discussion
- Conclusions



# Title Characteristics

- Focuses reader's attention on paper content
- Necessary for archive searches
- Common issues with titles
  - Too short or too long
  - Misleading: does not describe content
  - Uses unfamiliar jargon and abbreviations





# Title Examples

- Bad
  - “New Methods and Specialized Techniques Used by Super Oil Co. To Process and Analyze Pressure Data Gathered During the Well-Testing Program at the Heber Geothermal Field”
  - “A Look Ahead: Back to Basics”
- Good
  - “The Well-Testing Program at the Heber Geothermal Field”
  - “The Future of the Offshore Drilling Contracting Business: Back to Basics?”



# Abstract

- State objectives and scope of the paper
- Describe the method used
- Summarize the results
- State the principal conclusions
- Abstract from the full paper will show as abstract on **OnePetro**



# Introduction

- Clearly present the nature and scope of the problem investigated
- Briefly review pertinent literature
- State the method of investigation and justification



# Materials, Experiments or Methods

- Theoretical Papers
  - Hypothesis
  - Assumptions
  - Theoretical developments
  - Arguments to demonstrate applicability
- Experimental/Case Study Papers
  - Purpose of experiments/case study
  - Describe apparatus/equipment and procedures
  - Present data and observations
  - Inferences



# Results

- Representative data
- Avoid redundancies
- Avoid too many tables and figures



# Discussion

- Show relationships among observed facts
  - Components of the discussion are:
    - State any exceptions and lack of correlation
    - How the results and interpretations agree or contrast with previously published results
    - Theoretical implications and possible practical applications



# Conclusions

- Summarize how information provided supports claims made in the introduction
- Numbered conclusions supported by evidence in the paper
- State the implications of new information
- Be consistent with abstract



# References

- Should be relevant and referenced in the paper
- Directs readers to further information on the subject
- Permits author(s) to compare and contrast present work with other work
- SPE Policy: List only references available to readers. Personal communications, unpublished company reports, etc., need to be cited as footnotes.





# Tables and Figures

- Do not tabulate:
  - Supplementary data
  - Lab numbers
  - Results of simple calculations
  - Columns showing no significant variation
- Data that should not be tabulated should not be turned into figures
- Graph data that shows trends
- Be sure figures are easy to read and understand



# Where to Start Writing

- ***Not at the beginning!***
- Start with your conclusions
  - Focus on what you learned
  - Easier to work back from the known
- Use simple sentences
- Use common terminology
- Avoid commercialism



# Write the Paper Backwards

- Remember your purpose, get to the point
- Present conclusions first
- Describe how to get the results
- Describe the process/methodology
- Present the theory that explains the process



# Evaluate What You've Written

- Is it thorough?
- Have a colleague who did not work on the project read it
- Have a colleague who worked on the project read it
- Fill in any remaining sections except for the Abstract



# Acknowledgements

- Not always needed
- Acknowledge company or partners
- Acknowledge a research grant or government funding



# Finally: New Abstract

- Re-write, do not use your original abstract
- Write new abstract that reflects the paper you have just written
- Make it good!
- This is the basis on which people will decide whether your paper is worth reading



# Edit Several Times

- Once your technical story is written:
  - Edit the document for clarity
    - No run-on sentences or mis-spellings
  - Leave out extraneous information – stick to the story
  - Have others read your paper for clarity



# If English is Not Your First Language

- Have a native or experienced English speaker read your paper and make suggestions
- Look into fee-based services that can help
  - [American Journal Experts](#)
  - [Cambridge Language Consultants](#)
  - [Manucriptedit](#)
  - [Science Docs](#)
  - [Science Manager](#)
  - [SciTechEdit International](#)
- Balance writing clearly with the technical content of your paper





# Do Not Plagiarize

*Plagiarism is defined as using someone else's words and ideas and presenting them as your own*

- Few short quotes with citations, do not use long passages
- Cite your sources!
- Cite any previous personal work, do not copy and paste your words from an older paper



# Writing Tips From the Experts

- Support your arguments with references
- Always think of your audience
- Read your paper aloud to yourself and listen for clarity (awkward phrases, run on sentences)



# Manuscript Submission

- Create manuscripts in the SPE MS Word template provided for the meeting
- Follow the Author Kit instructions
- Figures and tables can be included in the manuscript or created separately
- Make all revisions before uploading (revisions will cost \$\$)



# Intellectual Property

- Get company clearance for information you will present BEFORE you submit the paper
- Ensure that you have cited the work of others correctly
- Do not submit abstracts for the same work to more than one meeting at a time



# Transfer of Copyright

- Sign and submit the SPE transfer of copyright form
- Copyright covers the words on the page, included figures, graphics, etc. only
  - It does not cover the ideas or intellectual property you are writing about
- Author/company retained rights are listed on back of the transfer of copyright form

*\*Note: Without a transfer of copyright to SPE, your paper cannot be presented at the meeting*



# PRESENTING YOUR PAPER



# Prepare

- Preparation is critical
- Think about your paper as a story
- Don't read your slides
- Rehearse: Present to your peers
- Practice answering questions – anticipate what questions you might get



# Create Slides That Tell Your Story

- Use the template provided
- Make them easy to read – good contrast
  - Dark background with white
  - White background with black or navy text
- Headline for each slide, then support with discussion
- Limit text to keep it simple
- Make illustrations readable
- No commercialism



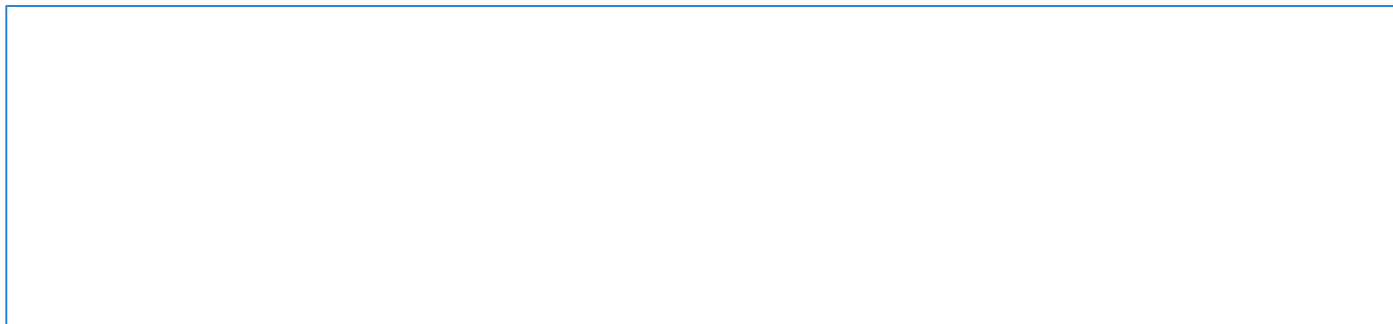


# Follow the Rule of 666

- No more than 6 bullet points per slide
- No more than 6-8 words per bullet point
- Every 6<sup>th</sup> slide (or so) should have a graphic

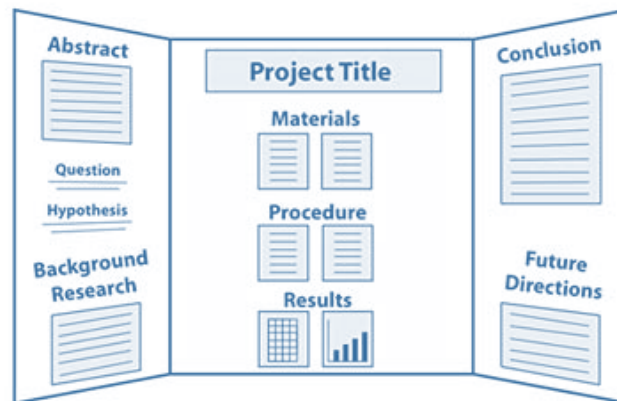


# PREPARING A POSTER/EPOSTER



# Posters

- Authors of posters prepare/submit papers
- No oral presentation
- Prepare few large poster boards
- Focus on most important points



# ePosters

- Authors of ePosters still write a paper and *may* make a presentation
- If session presenting author does not show up, an ePoster author may be asked to fill in
- ePoster will be visible throughout the conference
- There is an assigned time to discuss/Q&A your poster



# ePoster Presentations

- Follow the same guidelines as the session presentation
- Times are shorter than session presentations



# Publishing in SPE Journals

- 7 journals to choose from
- *SPE Drilling & Completion*
- *SPE Production & Operations*
- *SPE Reservoir Evaluation & Engineering*
- *SPE Economics & Management*
- *SPE Journal* (research)
- *Journal of Canadian Petroleum Technology*
- *Oil and Gas Facilities*



# What Makes a Paper a Candidate for Peer Review?

- Criteria
  - Relevance
  - Innovation
  - Technical detail
  - Presentation and documentation
  - Lacks commercialism
  - Willingness to revise paper



# Submitting to a Peer-Reviewed Journal

- Can submit with at same time as meeting presentation
- Independent submission for peer review

*Online submission links and information at*  
<http://www.spe.org/authors/peer-review/>





# How Does Peer Review Work?

- Two or more people review your paper anonymously
- They suggest improvements
- You revise the paper based on their suggestions
- Re-submit it



“I look first for originality – if the data, analysis, and ideas in the manuscript are new and novel. Second, I look for a logical organization and self-consistency of the methodology and data. Third, I look for a good story that the reader can follow.”

*Anthony Kovscek, Stanford University*  
*Former Executive Editor, SPE Journal*

“I look for clarity, logical progression, and a good storyline”

*Byron Haynes, Shell*  
*Associate Editor, SPE Reservoir Evaluation and Engineering*



# Summary

- Writing technical papers benefits you, your company, and the industry
- SPE meetings and journals are the preferred place for publication
- Write your Abstract to attract interest
- Keep your focus non-commercial
- Make sure it is technically sound/adds to the body of knowledge



# Summary

- Write your conclusions first
- Prepare to present your paper
- Consider whether your paper should be peer-reviewed
- Enjoy the writing process!



# Resources

- SPE Style Guide
- SPE Symbols and Metrics Standards
- Materials and Links in Author Kit

## Recommended Writing Aids

1. Bernstein, Theodore. 1983. *The Careful Writer—A Modern Guide to English Usage*. New York City: Atheneum Publishers.
2. Strunk, William Jr. and White, E.B. 1979. *The Elements of Style*, third edition. New York City: MacMillan Publishing Co.
3. *The Chicago Manual of Style*, 15th edition. 2003. Chicago: University of Chicago Press.
4. *Webster's Third New International Dictionary*. 2002. Springfield, Massachusetts: Merriam-Webster.

