

# Sample manuscript for *Applied Physics Letters*<sup>a)</sup>

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This is an abstract. It gives the reader an overview of the manuscript. In this sample article we provide instructions on how to prepare and submit your paper to *Applied Physics Letters*, a journal published by the American Institute of Physics (AIP). Authors must follow the instructions given in this document. The AIP staff appreciates your effort to follow our style when preparing your manuscript.

## I. THE MANUSCRIPT

Use this “sample manuscript” as a template for preparing your article. This will ensure that your submission will be in the required format for Peer Review. Please read all of the following manuscript preparation instructions carefully and in their entirety. The manuscript must be in good scientific American English; this is the author's responsibility. All files MUST be submitted through our online electronic submission system at <http://apl.peerx-press.org>.

### A. Manuscript preparation

Articles must be prepared as either a Microsoft Word .doc/.docx file or a REVTeX/LaTeX file. The entire manuscript, should be set up for 21.6 × 28 cm (8-1/2 × 11 in. or A4) pages with 2.54 cm (1 in.) margins all the way around. The font and the point size will be reset according to the journal's specs, but authors most commonly use the Times Roman font and point size 12. The manuscript must begin with a title, names of all authors and their affiliations, and an abstract, followed by the body of the paper, tables and figures, if any, included, and the reference section. Consecutively number all tables (I, II, III, etc.) and figures (1, 2, 3, etc.), including those in an Appendix. Figures may be embedded in the text or not (author's choice). Figure captions must be included in the manuscript. Number all pages consecutively, beginning with 1.

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<sup>a)</sup> This is an example of a footnote to the title if the paper was part of a conference: Contributed paper, published as part of the Proceedings of the 17<sup>th</sup> International Conference on Physics, Anytown, State, May 2010.

<sup>b)</sup> A. Author and B. Author contributed equally to this work.

<sup>c)</sup> This is an example of a footnote to an author's name: Author to whom correspondence should be addressed. Electronic mail: [author@somewhere.org](mailto:author@somewhere.org).

<sup>d)</sup> This research was performed while C. Author was at Anywhere National Laboratory, City, State, Postal code, Country.

## **B. Manuscript submission**

All files MUST be submitted through the online system: <http://apl.peerx-press.org>. Each version of the manuscript (the original and subsequent revisions) should be submitted with its own complete set of files: a cover letter (indicating the title, authors, and contact information), a complete article file, and separate figure files (see Sec. VIII—FIGURES). When uploading a revised manuscript, also include a response/rebuttal letter (indicating the changes made to address the Editor's and Reviewers' comments).

## **II. MANUSCRIPT LENGTH**

Manuscripts must never exceed three journal pages. An abstract limited to 100 words is required. In addition to the title, abstract, and references, the three-page length permits about 2000 words of text, reduced, however, by allowances for equations, tables, and figures. An average one-column figure with its caption will displace about 220 words of text. Authors are cautioned that discovery of excess length might not occur until a late stage in publication and would result in delay and expense. Circumvention of the length limitation by division of a long article into small parts is considered to be contrary to the purpose of this journal's restrictions. Please check the Information for Contributors at the journal's homepage ([http://apl.aip.org/apl/authors/information\\_for\\_contributors](http://apl.aip.org/apl/authors/information_for_contributors)) to find out rough and refined estimates of finished length requirements.

## **III. TITLE**

Make the title as concise as possible but informative enough to facilitate information retrieval. Only the most common acronyms and abbreviations are allowed in the title. Use acronyms with considerable moderation and always define at first use.

## **IV. ABSTRACT**

Limit the abstract to less than 100 words. It must be self-contained (contain no footnotes or citations to references), adequate as an index (giving all subjects, major and minor, about which new information is given), and a concise summary (giving the conclusions and all results of general interest in the article). The abstract must be one paragraph and should not contain displayed mathematical equations or tabular material. AIP journals do not require PACs numbers.

## **V. AUTHORS' NAMES AND ADDRESSES**

Authors' names should preferably be written in a standard form for all publications to facilitate indexing and to avoid ambiguities. Include the names and postal addresses of all institutions, followed by city, state, zip code, and USA if in the United States or by postal code, city, and country if not in the U.S. Please provide complete addresses. See the byline for this sample article for examples.

Authors with Chinese, Japanese, or Korean names may choose to have their names published in their own language alongside the English versions of their names in the author list of their publications. For Chinese, authors may use either Simplified or Traditional characters. Chinese, Japanese, or Korean characters must be included within the author list of the manuscript when submitting or resubmitting. The manuscript must be prepared using Microsoft Word or using the CJK LaTeX package. Specific guidelines for each authoring tool are given at [http://www.aip.org/pubservs/cjk\\_instructions.html](http://www.aip.org/pubservs/cjk_instructions.html).

## VI. FOOTNOTES

Footnotes are generally unacceptable in AIP journals, with the exception of footnotes to the title or authors. All other information should be included in the reference section. Use a), b), c), etc., for footnotes to the title or authors. The following list shows some examples:

<sup>a)</sup> Contributed paper, published as part of the Proceedings of the 17<sup>th</sup> International Conference on Physics, Anytown, State, May, 2010. (footnote to title)

<sup>b)</sup> A. Author and B. Author contributed equally to this work.

<sup>c)</sup> Author to whom correspondence should be addressed. Electronic mail: [author@somewhere.org](mailto:author@somewhere.org).

<sup>d)</sup> This research was performed while C. Author was at Anywhere National Laboratory, City, State, Postal code, Country.

## VII. EQUATIONS

Equations should be punctuated and aligned to bring out their structure and numbered on the right. Mathematical operation signs indicating continuity of the expression should be placed at the left of the second and succeeding lines. Use (×) rather than a centered dot, except for scalar products of vectors. Use a solidus (/) instead of built-up fractions in running text, and in display wherever clarity would not be jeopardized. Use “exp” for complicated exponents.

$$B_i = \begin{pmatrix} 1 & 2 & \cdots & N \\ B_i 1 & B_i 2 & \cdots & B_i N \end{pmatrix}, \quad (1)$$

$$I_D \theta = \frac{a}{2} + \sum_{n=1}^2 \cos 2n\theta + \sin 2n\theta . \quad (2)$$

Please note that you must use MathType or the Microsoft® Equation Editor 3.0. Use of Microsoft® Math Editor is not recommended.

## VIII. ACRONYMS AND NOTATION

Acronyms, except for the most common (such as 2D, rms, or ac) must be spelled out when they first appear both in the abstract and again in the text. Spell out machine names, except for those not considered acronyms (such as ITER or DIII-D). Try to avoid the excessive use of acronyms or specialized jargon.

Notation must be legible, clear, compact, and consistent with standard usage. Choose commonly used symbols from your discipline. All unusual symbols whose identity may not be obvious must be identified the first time they appear, and at all subsequent times when confusion might arise. Superscripts are normally set directly over subscripts; authors should note where readability or the meaning requires a special order.

## IX. FIGURES

Cite figures in text in numerical order of publication-ready illustrations. It is vital that you prepare your illustrations so that they are legible when reduced. Figures 1–6 show examples of various types of production-ready illustrations: color, line art, halftone, and combination (line art and halftone). Table I gives (a) general guidelines for preparing your illustrations and (b) guidelines for the preparation of electronic files.

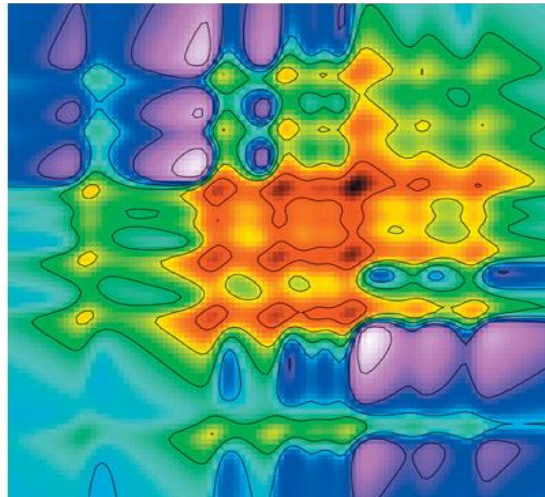


FIG. 1. (Color) This figure will appear in color in print and online. Figures should be created at 300 dpi and submitted at 300 dpi for the best presentation. Choose CMYK (cyan, magenta, yellow, black) for any figure that will appear in color in the print version.

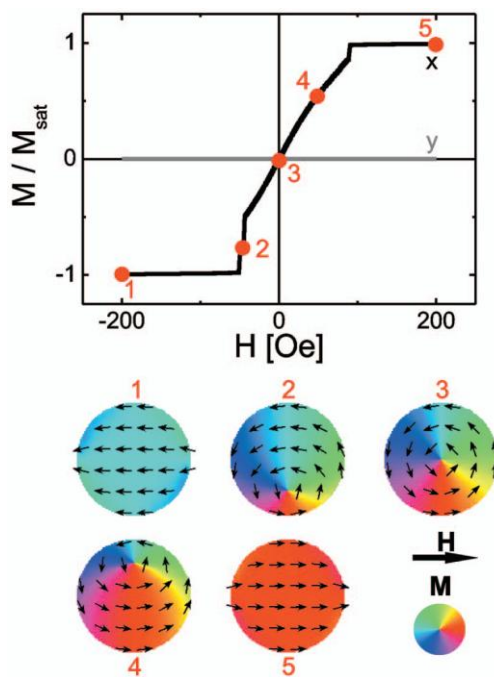


FIG. 2. (Color online) This figure will appear in color only in the online version only, not in the printed version. Figures should be created at 300 dpi and submitted at 300 dpi for the best presentation. Choose RGB (red, green, blue) for any figure that will appear in color only online.

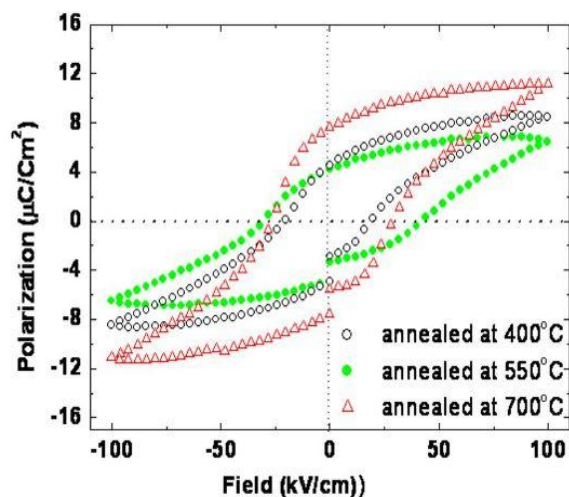


FIG. 3. This is a good example of information that was presented clearly. When this figure appeared in the printed journal it was in black and white print, but the reader was able to discern the “red” triangles, the closed “green” circles, and the open “black” circles. A description as well as the color is needed. If the caption had simply discussed “the red and green symbols,” the reader of the print version would not understand because he/she would be seeing the figure without the color.

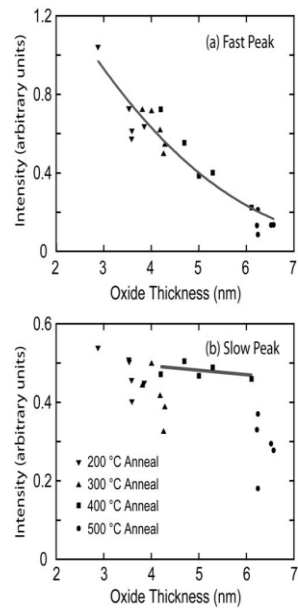


FIG. 4. This is an example of line art. Figures should be created at 600 dpi and submitted at 600 dpi for the best presentation. Save line art as black/white bitmap, not grayscale.

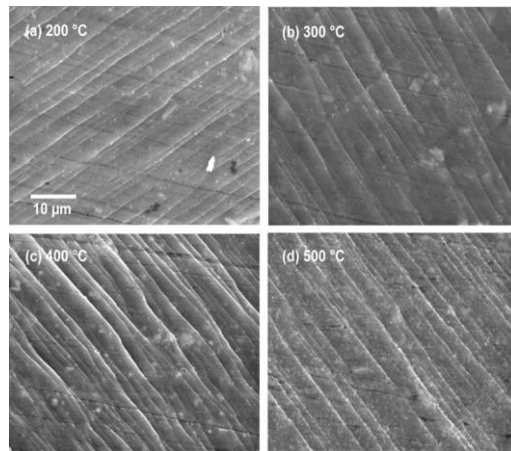


FIG. 5. This is an example of a halftone. Figures should be created at 300 dpi and submitted at 300 dpi for the best presentation.

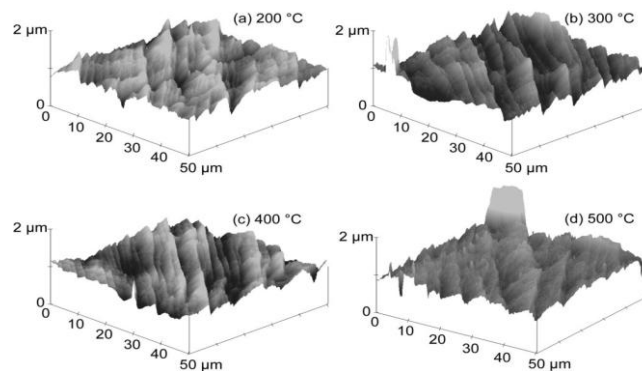


FIG. 6. This is an example of a combination figure (line art and halftone). Figures should be created at 600 dpi and submitted at 600 dpi for the best presentation.

TABLE I. This table provides instructions on how to prepare figures.

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### (a) General guidelines for preparing illustrations

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- Number figures in the order in which they appear in the text.
- Label all figure parts with (a), (b), etc. Each figure file should contain all parts of the figure. For example, if Fig.1 contains three parts [(a), (b), and (c)], then all parts should be combined in a single file for Fig. 1.
- Avoid any large disparity in size of lettering and labels used within one illustration.
- Prepare illustrations in the final published size, not oversized. The maximum published width for a one-column illustration is 8.5 cm (3-3/8 in.). The maximum width for a two-column figure is 17 cm (7.0 in.).
- In cases where reduction is required, avoid small open symbols that tend to fill in and avoid small lettering; ensure that, in the final published illustration, there is a minimum of 8-point type size (2.8 mm high; 1/8 in. high) for lettering and 0.5-point width for lines.
- Ensure that lettering and lines are dark enough, and thick enough, to reproduce clearly. Remember that fine lines tend to disappear upon reduction.
- It is preferred that authors embed figures and captions in the manuscript file. Embed the figures in the approximate position and size you think is appropriate. **In addition, separate figure files must be provided (see below for accepted file formats) along with the manuscript.**

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### (b) Guidelines for preparation of electronic graphics files

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- Acceptable formats for figures: Portable Document Files (PDF), Encapsulated PostScript Files (EPS), PostScript, or Tagged Image File format (TIF). EPS (using Arial or Times Roman fonts) is preferred graphic format when preparing illustrations. Microsoft Word (.doc or .docx) or JPEG (.jpg) files are **NOT** acceptable.
  - More detailed information is given about figure preparation on the APL website in the [Information for Contributors](#) tab.
  - Settings: Set the graphic for 600 dpi resolution for line art, 300 dpi for halftones, and 600 dpi for combinations (line art + halftone).
  - Save line art as black/white bitmap, not grayscale.
  - Save halftones and combinations as grayscale, not black/white bitmap.
  - Click [here](#) for publication charge information.
  - Submit color files at 300 dpi in one of the accepted file formats: PDF, EPS, PS, or TIF. EPS (using Arial or Times Roman fonts) is preferred graphic format when preparing illustrations. No other type of color illustration is acceptable. When selecting a file mode, for print choose CMYK (cyan, magenta, yellow, black) and for color online choose RGB (red, green, blue).
  - PDF files should be vector files.
  - In the PDF illustration, resolution of any shaded or photographic images must be 600 pixels per inch (PPI).
  - Within the PDF illustration, resolution of line art with no shading should be 1200 pixels per inch (PPI).
  - All fonts must be **embedded** in the PDF.
  - Select "High Quality Print" when creating a PDF through the application's print command.
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## X. TABLES

Separate tables (numbered with Roman numerals in the order of their appearance in the text) should be used for all tabular material. Tables must be embedded in the article file, not uploaded like figure files. The structure should be clear. Use simple column headings and include units of measure. Table captions are positioned above the table and should be styled as “TABLE I. This is a table caption.” A caption should make its table intelligible without reference to the text. Capitalize the first word in the table headings and subheadings. References within tables are designated by lowercase Roman letter superscripts and given at the end of the table. Unaltered computer output and notation should be uploaded as supplemental files. See Table II for an example of correct table styling.

TABLE II. Bond distances for alkene molecules (atomic units).

No. C <sup>a</sup>	$RI,I+1$ <sup>b</sup>	$SRI,I+1$ <sup>c</sup>	$RI-1,I+RI,I+1$	$SRI-1,I+RI,I+1$
2	2.5255	...	...	...
4	2.6175	0.123	5.306	...
6	2.6314	0.0999	5.3025	0.0112
8	2.6368	0.0876	5.3009	0.0111
10	2.6396	0.0795	5.2999	0.0106
14	2.6424	0.0689	5.2989	0.0096
18	2.6437	0.0623	5.2982	0.0088
22	2.6443	0.0573	5.2973	0.008
26	2.6448	0.0536	5.2968	0.0074

<sup>a</sup>C is the number of carbon atoms.

<sup>b</sup> $RI,I+1$  is the distance between two neighboring carbon atoms, while  $\langle RI,I+1 \rangle$  is the average of  $RI,I+1$  for a given molecule.

<sup>c</sup> $SRI,I+1$  is the standard deviation of  $RI,I+1$  within the given molecule.

## XI. MULTIMEDIA SUBMISSIONS

Multimedia files can be included in the online version of published papers. All such files are peer reviewed. When published, these files can be viewed by clicking on a link from the figure caption, provided that the reader has a video player installed, such as Windows Media Player<sup>TM</sup>, Quick Time Player<sup>TM</sup>, or RealOne Player<sup>TM</sup>. Please see [Information for Contributors](#) on our website. Click on [Multimedia](#). Please note the following important information when preparing your manuscript:

- Treat all multimedia files as figures, numbered in sequence as they are referred to in text. (Multimedia files will **not** have a numbering scheme separate from the figures.) For each multimedia file, provide a figure, which is a static

representation of the multimedia file. Also provide an accompanying caption. At the end of the caption, include the phrase "(enhanced online)."

- All multimedia files must be cited in the text, referred to by their figure number.

## **XII. SUPPLEMENTAL MATERIAL**

Text material that may not be of interest to all readers, long data tables, multimedia, and computer programs may be deposited as supplementary materials. Information about depositing supplemental material may be found at the journal's [Information for Contributors](#) section on the website.

## **ACKNOWLEDGMENTS**

Typically, standard acknowledgments include financial support and technical assistance, and may include dedications, memorials, and awards. Check with the Editorial Office for suitability of an acknowledgment if there is any question. To indicate the author, use initials. For example, "B.A. wishes to thank A. Waldron for technical assistance. C.A. wishes to thank Anytown University for use of their equipment." Note: the Acknowledgment section is not a numbered section.

## **APPENDIX**

Appendices are placed after the acknowledgments section and before the listing of references. Appendices must have a Level One heading as illustrated below. They do not follow the sequential heading numbering given in the rest of the paper. If there is only one appendix, then the heading is set as follows:

### **APPENDIX**

If there is more than one appendix, the headings are set as:

**APPENDIX A: DESCRIPTION**

**APPENDIX B: DESCRIPTION**

Subheadings in an Appendix are labeled 1, 2, etc.

## **REFERENCES**

References must be numbered consecutively in order of first appearance in the text and should be listed at the end of the text material. Reference citations in text are rendered in several ways. For example:

Park *et al.*<sup>1</sup>

Narayan and Banaszuk<sup>8</sup>

MOLPRO (Ref. 11)

The citation in the reference list must include the full list of authors. Do not list the first author followed by an abbreviation such as *et al.* See Table III for acceptable reference formats.

TABLE III. This table provides instructions on how to prepare references.

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**Articles “submitted to” or “accepted for publication” (but not yet published) in a journal:**

When possible, these references should be updated in the galley proof.

<sup>1</sup>K. Park, A. Marchenkov, Z. M. M. Zhang, and W. P. King, *J. Appl. Phys.* **101**, 094504 (2007).

**Books:** List authors and editors. Must include publisher, city and year of publication, and the page numbers (unless the entire book is being cited).

<sup>2</sup>R. J. Hunter, *Zeta Potential in Colloid Science* (Academic, New York, 1981) p.120.

**AIAA Papers:** AIAA Papers: The usual format is: {Author’s names}, {Paper Title}, AIAA Pap. {usual formats are 99-1111 or 2004-2222}, {year -- corresponds to numbers on left side of paper number}..

<sup>3</sup>M.S. Narayan and A. Banaszuk, “Experimental study of a novel active separation control approach,” AIAA Paper No. 2003-0060, 2003.

**Conference proceedings:** Include the list of authors, the title of the proceedings, the city and year of the conference, the name of the publisher (cannot be a laboratory or institution), city and year of publication (or the words “to be published”), and the page numbers. Include the full list of editors, if they are given.

<sup>4</sup>R. K. Ahrenkiel, in *Gallium Arsenide and Related Compounds 1993: Proceedings of the 20th International Symposium on Gallium Arsenide and Related Compounds*, Freiburg, Germany, 29 August–2 September 1993, edited by H. S. Rupprecht and G. Weimann (Institute of Physics, London, 1994), pp. 685–690.

**Government publications:** Format as for a book citation. Each must include the author(s), title of the publication, name of the publisher, city and year of publication, and page numbers (unless the entire publication is being cited).

<sup>5</sup>D. Nunes, *The Brillouin Effect* (U.S. Department of Energy, Washington, DC, 1992).

**Journal citations:** Include authors (see author rule above), volume number, beginning page number, and publication year:

<sup>6</sup>J. D. Kiely and J. E. Houston, *Phys. Rev. B* **57**, 12588 (1998).

**Laboratory report:** May only be used if first deposited with a national depository such as the National Technical Information Service. (Check with the NTIS librarian at 703-605-6000.) Materials or reports in electronic form—codes, data tables, etc.—may be uploaded as supplemental material files (see Sec. XII). If the paper is on deposit with NTIS, use the following format:

<sup>7</sup>See National Technical Information Service Document No. DE132450 L. (R. Newchuck, SESAME Tables, LANL Rep. 23453, 1983). Copies may be ordered from the National Technical Information Service, Springfield, VA 22161.

**Multiple citations are acceptable:**

<sup>8</sup>D.-Y. Choi, S. Madden, A. Rode, R. Wang, and B. Luther-Davies, *J. Non-Cryst. Solids* **354**, 3179 (2008); *J. Appl. Phys.* **104**, 113305 (2008).  
(same authors, different journals)

or

<sup>9</sup>J. Scaroni and T. Mckee, *Solid State Technol.* **40**, 245 (1997); M. G. Lawrence, *Bull. Am.*

Meteorol. Soc. **86**, 225 (2005).

(two completely different references)

or

<sup>10</sup>Y. de Carlan, A. Alamo, M. H. Mathon, G. Geoffroy, and A. Castaing, *J. Nucl. Mater.* **283–287**, 762 (2000); M. H. Mathon, Y. de Carlan, G. Geoffroy, X. Averty, A. Alamo, and C. H. de Novion, *ibid.* **312**, 236 (2003).

(different authors, same journal)

**MOLPRO:**

<sup>11</sup>H.-J. Werner, P. J. Knowles, R. Lindh, F. R. Manby, M. Schütz, *et al.*, Molpro, version 2006.1, a package of *ab initio* programs, 2006, see <http://www.molpro.net>.

**Preprints and electronic postings:** Preprints or eprints that have not been submitted to a journal for publication (i.e., are only posted on a preprint server) cannot be used as references.

**Private communication:** May *not* be one of the authors of the article. Must include the year in which the communication took place.

<sup>12</sup>A. Einstein (private communication, 1954).

**References as footnotes:** Footnotes are not permitted within the main text. Each should be numbered and described in the reference list.

**Software manuals:** If published, use the book format; if not published, give the entire address for the software maker.

**Thesis/dissertation:** Include the author, school, and year, but not the title.

<sup>13</sup>S. L. Goldschmidt, Ph.D. thesis, University of California, Los Angeles, 1985.

**Web sites:** Due to their perishable nature, web sites are not generally acceptable as references unless the site is maintained as an archival site. It is permissible to include web sites as adjuncts to acceptable references.

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