

Using Journal Class Files and Packages

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Abstract

Module 8 will introduce variations in syntax when using document class files provided by publishers. Differences when using class files provided by Elsevier, IEEE, and ACS will be shown.

1 Publisher Class Files

Most publisher class files are based on `article.cls`, but the commands and environments that come with the class file can be very different particularly for the front matter. Some journals consider additional information part of the front matter, which changes the order of markup commands. For example, the abstract is part of the “front matter” in Elsevier journals, thus it appears before `\maketitle`.

The options can be very different than `article.cls` as well. Since they want your document have the same format as required for their journal, they often limit the number of options that you can use. Those that have more options are usually for publishers that have a massive number of journals where some differ in format.

Often the publisher class files will load common packages for you and set the options to match their journal. For example, `elsarticle.cls` includes `geometry.sty` and sets the options for you. In addition, URL color is declared as blue in `elsarticle.cls` if the `hyperref` package is loaded. Declaring a color of green in the document will not change the color.

The documentation for class files is **extremely** important due to these facts. If you want to publish to a journal, the first thing you will do is download their \LaTeX class file, packages, and documentation. Also, it is a good idea to look at some published articles from the journal whenever possible.

There are hundreds of publisher class files, so they cannot all be discussed here; however, the process of obtaining and learning to use these class files is the same. Several examples publisher class files are given in the rest of this document.

1.1 Elsevier

The article class file for Elsevier is `elsarticle.cls`. In this example, the two column style (`5p`) and the use of `times` or comparable fonts for math (`times`) options were chosen.

```
\documentclass[5p,times]{elsarticle}
```

The syntax of the commands for the front matter remain the same, but order of these commands could vary depending on the target Elsevier journal. An example of one way the front matter could be entered is

```
\title{The effect of fluorosurfactant, copolymer latex, and cross-linker on the surface properties of floor polishes: An investigation using AFM with adhesion mapping}  
\author[ua]{Rebecca L.~Agapov}  
\author[om]{James~Robbins}
```

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```

\author[om]{Richard~Thomas}
\author[om]{Dave L.~Hardman}
\author[ua]{Mark D.~Foster\corref{corr}}
\address[ua]{The University of Akron, Department of Polymer Science, Akron, OH 44325–3909, United States}
\address[om]{OMNOVA Solutions, 2990 Gilchrist Road, Akron, OH 44305–4418, United States}
\cortext[corr]{Corresponding author. Tel.: +1 330 972 5323; fax: +1 330 972 5290. E–mail address: mdf1@uakron.
edu (M.D. Foster).}

```

The abstract is part of the front matter, so it occurs before `\maketitle`. Keywords are entered using the *keyword* environment, which also occurs prior to the *maketitle* command. A command `\sep` is used as a separator to ensure that proper punctuation is used. The abstract and keywords for this article are input as

```

\begin{abstract}
  The performances of three fluorosurfactants of different perfluoroalkyl chain lengths in styrene–butadiene (SB) and
  styrene–acrylic (SA) latex formulations having different virtual cross–linkers were investigated with atomic force
  microscopy (AFM). Topographic mapping provided no conclusive relationship with macroscopic observations of
  floor polish performance (with “performance” being judged by absence of haze and uniformity of flow and leveling
  .) Adhesion mapping of the film surfaces revealed mesoscale lateral phase separation for the zinc cross–linked
  SB latex formulations with specific fluorosurfactants, but not for the SA latex formulations with either calcium or
  zinc cross–linking. FT–IR spectroscopy analysis supports the contention that lateral phase separation occurred
  due to the formation of a complex between the fluorosurfactant and the zinc cross–linking agent when used in the
  SB formulations. All three fluorosurfactants successfully flowed and leveled the SA formulation, using either
  calcium or zinc cross–linking, without the formation of a complex. These experiments present high resolution
  adhesion maps of latex films that link mesoscopic properties to macroscopic performance of the dried floor polish
  films.
\end{abstract}

\begin{keyword}
  Fluorosurfactant\sep Latex film\sep Lateral phase separation\sep Virtual cross–linking\sep Adhesion mapping
\end{keyword}
\maketitle

```

Abstract from ([Agapov, Robbins, Thomas, Hardman, & Foster, 2013](#)).

Elsarticle.cls provides an additional option for *enumerate* to specify format. This enables the author to change the numbering style by using an optional argument `\begin{enumerate}[A.]`. Several packages are listed that can be used the *elsarticle* class to add tables, figures, and mathematical equations. Also, the class file offers a new command to create an environments for proofs. The publisher provides multiple bibliographic style files (.bst) and .tex files to use as templates. For more information, [use the guide for elsarticle.cls](#).

1.2 IEEE

There is an IEEE class file that is valid for most IEEE Transactions called `ieeetran.cls` and has extensive documentation. Our example, uses the *twoside* option with the intention of creating an article for an IEEE Transaction journal.

```

\documentclass[twoside]{IEEEtran}

```

The option, *journal*, is default, so it does not need written explicitly. IEEE Transactions use running headings that alternate. Odd pages display the journal name, volume, etc. and even pages display the authors. The *twoside* option is needed for the running headings to display properly.

IEEE documents can look extremely different depending on the options that are used, so there is flexibility in creating documents. The chosen options vary how information is input into the document particularly for the front matter. In addition, the class file documentation gives much direction about how to use additional packages and core L^AT_EX commands when submitting articles to their journals.

For our example, we use the default *journal* option. It is not an IEEE Computer Society journal, so we did not use the *compsoc* option. Due to these facts, the affiliation is displayed using typical L^AT_EX markup commands, such

as the `thanks` command. If we used the `compsoc` option, the `IEEEcompsocitemizethanks` and `IEEEcompsoc-thanksitem` commands are used instead of the `thanks` command. The class file provides a command to display IEEE membership status as well. The frontmatter will be entered as

```
\title{Control of Lateral Motion in Moving Webs}
\author{John~B.~Yerashunas, J.~Alexis~De~Abreu~Garcia, and~Tom~T.~Hartley, %
\thanks{Manuscript received November 2, 2001; revised November 27, 2002. Manuscript received in final form
April 28, 2003. Recommended by Associate Editor G.~Dumont.} %
\thanks{J. B. Yerashunas is with The Goodyear Tire and Rubber Company, Akron, OH 44316–0001 USA.} %
\thanks{J. A. De Abreu–Garcia and T. T. Hartley are with the Department of Electrical and Computer
Engineering, The University of Akron, Akron, OH 44325–3904 USA (e–mail: alexis4@uakron.edu;
TomHartley@aol.com).}%
\thanks{Digital Object Identifier 10.1109/TCST.2003.816409}}
```

For IEEE Transactions, the abstract and keywords are in the body of the document. They are not part of the frontmatter, so the `maketitle` command appears before the `abstract` and `IEEEkeywords` environments. This would differ for IEEE Computer Society journals. The abstract and keywords for this article is

```
\maketitle
\begin{abstract}
A partial differential equation for the lateral motion of a web conveyance system is derived by modeling the web as a
viscoelastic beam under axial tension. This model treats the web position between rollers as a function of both
time and space, assumes that there is no slip between the web material and the rollers, and incorporates the web
material’s viscoelastic damping property. A finite–difference approximation of the model is used to simulate a
typical two–span web system. The finite–difference approximation is validated by comparing its frequency
responses with those of an analytical frequency domain model. The analytical frequency domain model is used to
design feedback compensation strategies that make the two–span web system less sensitive to upstream
disturbances. The results show that, using a transverse vibration model incorporating viscoelasticity to design
even simple classical controllers, it is possible to make the web system.
\end{abstract}

\begin{IEEEkeywords}
Control of moving webs, industrial conveyance systems, web modeling.
\end{IEEEkeywords}
```

IEEE journals use running headings using the `markboth` command. This class file formats many typical L^AT_EX commands to display proper formatting. For example, when using `article.cls`, the text will appear in the heading as it has been typed in each required argument. When using `ieeetran.cls`, the class forces each heading to be uppercase. A phrase commonly used in the author string is *et. al.* The `MakeLowercase` command must be used to force it to be lowercase and the `textit` command must be used to make it italic. The heading for this article would be entered as

```
\markboth{IEEE transactions on control systems technology,~Vol.~11, No.~5, September~2003}%
{Yerashunas \MakeLowercase{\textit{et al.}}: Control of Lateral Motion in Moving Webs}
Abstract from (Yerashunas, De Abreu-Garcia, & Hartley, 2003).
```

When selecting the `conference` option, there are special commands for the authors and affiliations. The front matter for a conference could be entered as

```
\documentclass[conference]{IEEEtran}
...
\author{\IEEEauthorblockN{Arjuna Madanayake, Chamith Wijenayake,\ Rimesh M. Joshi, Jim Grover, Joan Carletta
,\ Jay Adams and Tom Hartley}
\IEEEauthorblockA{ECE, University of Akron, Akron, OH, USA\
e–mail: arjuna@uakron.edu}
\and
\IEEEauthorblockN{Tokunbo Ogunfunmi}
\IEEEauthorblockA{ECE, Santa Clara University,\
Santa Clara, CA, USA\
e–mail: togunfunmi@scu.edu}}
```

There are sections in the class file documentation that discuss lists, tables, and figures. There are multiple .tex files that can be used as templates to make using the class file easier. There are various bibliographic style files (.bst) as well. For more information, [use the guide for ieeetran.cls](#).

1.3 American Chemical Society (ACS)

The article class file for ACS is `achemso.cls`. There are very few options available with this package: *journal*, *manuscript*, *layout*, and *email*. Remember that the goal of the publisher class files is to create documents in the appropriate style for their journals. Publisher class files only provide as much flexibility as they must.

The options are set as `key=value`, which differs from the packages in the previous subsections. The class file sets the bibliographic style, so the command will be ignored if you use it in your document. Manuscript type determines structure, such as including an abstract. The class file would be included in a \LaTeX document for a journal article submitted to Langmuir as

```
\documentclass[journal=langd5,manuscript=article,layout=twocolumn,email=false]{achemso}
```

With this class file, the `title` command has an optional argument for a short version of the title to be used in running headings. Each author is entered separately and there are commands for the entry of emails and affiliations. The `maketitle` command is not needed because it is included in the class file. Front matter for this article is entered as

```
\title[Reinforcement of Silica Aerogels]{Reinforcement of Silica Aerogels Using Silane–End–Capped Polyurethanes}
\author{Yannan Duan}
\affiliation{Department of Polymer Engineering, The University of Akron, Akron, Ohio 44325–0301, United States}
\author{Sadhan C. Jana}
\affiliation{Department of Polymer Engineering, The University of Akron, Akron, Ohio 44325–0301, United States}
\email{janas@uakron.edu}
\author{Bimala Lama}
\affiliation{Department of Chemistry, The University of Akron, Akron, Ohio 44325–3601, United States}
\author{Matthew P. Espe}
\affiliation{Department of Chemistry, The University of Akron, Akron, Ohio 44325–3601, United States}
```

For more information, [use the guide for achemso.cls](#).

2 Conclusion

Publisher class files can be used to produce documents in the correct format for a particular journal, thereby eliminating the formatting burden for the author. This enables authors to focus on content instead of document format. There are differences in syntax when using these class files, but these differences can be found in the user documentation provided by the publisher.

References

- Agapov, R. L., Robbins, J., Thomas, R., Hardman, D. L., & Foster, M. D. (2013). The effect of fluorosurfactant, copolymer latex, and cross-linker on the surface properties of floor polishes: An investigation using {AFM} with adhesion mapping. *Progress in Organic Coatings*, 76(9), 1279 - 1287. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0300944013000829> doi: <http://dx.doi.org/10.1016/j.porgcoat.2013.03.020>
- Yerashunas, J., De Abreu-Garcia, J., & Hartley, T. (2003, Sept). Control of lateral motion in moving webs. *Control Systems Technology, IEEE Transactions on*, 11(5), 684-693. doi: 10.1109/TCST.2003.816409