



Publishing PNNL Posters in \LaTeX | The PNNL-Posters Package

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(Click on the tabs above for more information on each topic. Some tabs also have tabbed subtopics.)

Welcome to the PNNL-Posters Package!

Welcome to the use of the new PNNL-Posters.cls file. We've made the process of preparing your posters as simple and handsome as possible, and hope you'll enjoy the process.

If you need help after you read this documentation, you may send email to Colleen Winters at colleen.winters@pnnl.gov or Mike Parker at mike.parker@pnnl.gov.

If possible please send a small file demonstrating the problem.

Files in this package, and what they do

pnnl-posters.cls Document class file

PosterTemplate.tex A file containing all the commands that are unique to this style, with explanations of how to use them

PosterSample.tex/.pdf Compare Poster samples with their resulting .pdf to see how to enter commands correctly.

ThreeColumnSamples.zip, TwoColumnSamples.zip, and OneColumnSamples.zip Sample files for each poster size and column number.

PosterGraphics.zip All the graphics files you will need for the different sized posters; and illustrations to be used in sample files. Please make a directory up one level from the directory in which you are working, called PosterGraphics and drop the contents of PosterGraphics.zip into that directory.

PosterFonts.zip Repository for fonts: You may not need these font files, since we are only using Arial for the body fonts, and Arial is commonly found on computers already; but if you do need them, put the files found in fonts.zip in the same directory as your .tex file.

PosterDocs.pdf Documentation (this document)

readme.txt List of files and their uses

Tips as you get started

You'll find many examples of commands in use in postersample.tex with the resulting document postersample.pdf. Comparing the .tex file with the resulting .pdf file is an excellent introduction to this style. You will also find a whole series of samples in ThreeColumnSamples.zip, TwoColumnSamples.zip, and OneColumnSamples.zip. Each file is named by the size of the sample poster.

You'll also find copying the PosterTemplate.tex and giving it a new name and working in the new file will make it easier to find information about commands that are unique to this style.



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xelatex and lualatex

We are using the fontspec package for fonts, which is necessary for using our .otf font files.

However, fontspec expects the user to format the .tex file using xelatex or lualatex instead of pdflatex or other varieties of LaTeX engines. ***If you don't use xelatex or lualatex you will get an error message, and your document will not compile, so you will be instantly reminded of this fact.***

You'll find using xelatex or lualatex is no more difficult to use than pdflatex so this should not be a problem.

Make a PosterGraphics directory

To get started, make a directory or folder one level up from the directory or folder where your .tex file is found. Name this directory/folder `\postergraphics`, and drop the illustration files found in PosterGraphics.zip into the new directory. Some commands found in the pnnl-posters.cls file will look for graphics files in the **`./postergraphics` directory**, so we want to be sure that this directory exists and has the contents of PosterGraphics.zip found in it.

Packages Included in pnnl-posters.cls

To save you from having to include these files, they are already found in pnnl-posters.cls:

Font management: **fontspec**

Graphics packages: **graphicx** for including figures,

Formatting: **framed, mdframed**

Hyperlinking: **hyperref**

Table and Color macros: **xcolor, colortbl,array, tabularx**.

Multiple columns, **multicols**.

Using the PosterTemplate file

The easiest way to start your article is to copy and rename the template file, **PosterTemplate.tex**, and use it to start producing your poster. You'll find some examples of the commands you can enter to make the poster, and reminders and examples about the other commands you might use.

Using the Poster Sample files

As well as the template file, the sample file for making a poster, **PosterSample.tex/.pdf** will be helpful, since you can compare the code with the resulting .pdf, giving yourself guidance when making your own poster. There are also 15 sample files of differing sizes and column numbers that you may find useful. Each has a .pdf and matching .tex file to see how the poster was formatted and commands entered. They are **ThreeColumnSamples.zip**, **TwoColumnSamples.zip**, **OneColumnSamples.zip**



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Starting your Poster | **Document Class Options** | Before Begin Document | Title, Subtitle | Fonts/Colors

Document Set Up: Documentclass Options

You have these documentclass options.

1) Set the size of the poster, (Required)

Size in inches. For instance, horizontal36x24 is 36 inches wide and 24 inches tall. (Landscape orientation posters are wider than tall; portrait orientation are taller than wide). Choose one of these sizes.

Landscape orientation:

horizontal36x24

horizontal48x36

horizontal60x36

Portrait orientation:

vertical24x36

vertical36x48

Used: `\documentclass[<poster size option>]{pnnl-posters}`

2) Mark poster with classification level, (Optional)

When a classification option is used, the correct classification level will be entered at the bottom of the poster.

Your choices of classification level options include:

OUO (Official Use Only)

FOUO (For Official Use Only)

SSI (Sensitive Security Information)

BusinessSensitive (Business Sensitive)

(no option) (No classification level listed)

Used: `\documentclass[<poster size option>,<classification option>]{pnnl-posters}`



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Commands used before $\begin{document}$

Identification for bottom of poster

Optional contact information:

```
\staffname{  
\staffphone{  
\staffemail{  
\currdate{
```

Used, for example:

```
\staffname{Staff Name}  
\staffphone{(509) 375-1234}  
\staffemail{staff.name@pnnl.gov}  
\currdate{8/1/2020}
```

Note: If $\backslash\text{staffname}\{\}$ is not given an argument, none of the following contact information commands will be used.

Optional vertical lines between columns

To get vertical lines between columns, if two or three columns, enter

```
\columnlines
```

Set width of vertical line or lines: (wider for larger poster size)

```
\columnlinewidth{4pt}
```

Set color of lines, (default is black):

```
\columnlinecolor{<color>}, ie, \columnlinecolor{dkblue}.
```

Add another logo to the bottom of the poster?

Extra logo command must be used before $\backslash\text{begin}\{\text{document}\}$. Drop the logo into the postergraphics directory, where all the other graphics files are found:

```
\extralogo{<width of logo>}{./postergraphics/illustration file name}, ie,  
\extralogo{3in}{./postergraphics/CMElogo.pdf}
```




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Title and Subtitle

Immediately after `\begin{document}` and before we start the column environment, we must enter `\title{<title name>}` and `\subtitle{<authors>}`.

Either command will allow line breaking with `\\`, as you see below.

```
\title{HAW: Hybrid Advance Workflows}
\subtitle{Vito Giovanni Castellana, Roberto Gioiosa, Maurizio Drocco,
Ryan Friese, Marco Minutoli,\\ Joshua Suetterlein}

\startthreecolumns...
```

Which produces the title and author names:

HAW: Hybrid Advance Workflows

Vito Giovanni Castellana, Roberto Gioiosa, Maurizio Drocco, Ryan Friese, Marco Minutoli,
Joshua Suetterlein



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Starting your Poster | Document Class Options | Before Begin Document | Title, Subtitle | **Fonts/Colors**

Fonts

You may never need to change fonts in your poster, but if you do, the standard LaTeX font commands will work, with the exception of the standard `\normalsize` command, which is `\normalfontsize` in this package. The standard font family commands, `\bf`, `\it` or `\bfseries\itshape` (bold italic), work with any of these sizes, and math size will also be adjusted. The listed sizes are adapted for each poster size, in the case of this example, for `horizontal36x24` size:

HAW: Hybrid Advance Workflows

Vito Giovanni Castellana, Roberto Gioiosa, Maurizio Drocco, Ryan Friese, Marco Minutoli, Joshua Suetterlein

```
\Huge Huge,
\huge huge,
\Large Large,
\large large,
\normalfontsize normalfontsize,
\small small,
\footnotesize footnotesize,
\scriptsize scriptsize.
```

Colors

The `xcolor.sty` file has been included in `pnnl-posters`, which means the we can define new colors if absolutely needed. In general, you are encouraged to confine yourself to the colors that are used in the poster-sample.tex/.pdf file: `copper`, `dkblue`, `tablelineblue`, `tabletopblue`, `ltgray`, `gray`, `dkgray`, and `verydkgray`.

These colors can be called with the `\color{}` command, ie, `\color{copper}`, surrounded with curly brackets to keep the color change local: `{\color{copper} This is copper}`.

In addition these colors are predefined: black, blue, brown, cyan, darkgray, gray, green, lightgray, lime, magenta, olive, orange, pink, purple, red, teal, violet, white, yellow.

Finally, if you feel a strong need to define your own color, you can do so with the command `\definecolor{<colorname>}{cmyk}{(% of cyan), (% of magenta_), (% of yellow), (% of black)}` ie, `\definecolor{plainblue}{cmyk}{.35, .16, .01, 0}`

Caution: use additional colors with care!



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How Many Columns? | Sub Columns

Use One, Two, or Three Columns?

Perhaps some experimentation might be valuable to see which number of columns will best format your content, and which poster size would be best for the number of columns you'd like to use. Generally, the larger the poster, the more columns will look right. Looking through the poster sample files may help you decide on the size and number of columns you'd like to use.

Here's how to make the columns, which will adjust their size to fit in the size of your poster.

Three Columns

All commands must be used, whether or not you fill the column:

```
\startthreecolumns\colone \coltwo \colthree \endthreecolumns
\startthreecolumns
\colone
<Text and illustrations>
\coltwo
<Text and illustrations>
\colthree
<Text and illustrations>
\endthreecolumns
```

Two Columns

All commands must be used, whether or not you fill the column:

```
\starttwocolumns\colone \coltwo \endtwocolumns
\starttwocolumns
\colone
<Text and illustrations>
\coltwo
<Text and illustrations>
\endtwocolumns
```

One Column

All commands must be used, whether or not you fill the column:

```
\startonecolumn \endonecolumn
\startonecolumn
<Text and illustrations>
\endonecolumn
```



Subcolumns using Multicols

Within one column we can use the `\begin{multicols}{<number of columns>}... \end{multicols}` command, as you can see demonstrated below.

HAW'S GOALS AND SPECIFIC AIMS

- Design and develop:
 - Novel hardware/software co-design methodologies
 - Tools
 - Software programming libraries
 -
 - Efficiently perform design space exploration of future system architectures
 - Implement software stacks, and applications
- Provide heterogeneous support for DMC applications dependent on both novel hardware and software designs for peak performance

Isn't that neat? Here's the code that produced this, using `\begin{multicols}{2}` to ask for two columns within the existing column. (`\setarrow{<dimen>}` is not necessary unless you want an arrow pointing from one column to the next.)

```

\section {HAW's Goals and Specific Aims}
\begin{multicols}{2}
\begin{itemize}
\item Design and develop:
\begin{itemize}
\item Novel hardware/software co-design methodologies
\item Tools\setarrow{1.5in}
...
\end{itemize}
\end{itemize}
\end{multicols}

```

Generally multicols will make columns and the separation between columns appropriately for the space, but you can modify further by changing space between columns by modifying `\columnsep` and changing the width of the text in the itemized list by modifying the `\linewidth` dimension. We will see more examples of modifying parameters in the next section, [Modify Defaults](#).



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Modify columnwidth

Interestingly, all the columns don't need to be the same width, so we can make them either wider or narrower, as our needs determine, using the command `\changeacolwidth{<dimen>}`, used within the column.

We can modify the column width using either positive or negative dimension. If you add more horizontal space to one column you may want to make other column or columns less wide. For example, `\changeacolwidth{4in}` or `\changeacolwidth{-4in}`.

Modify line width in listing environments

`\linewidth` is the dimension that determines where text wraps in an itemized environment.

`\advance\linewidth - <dimen>` to make less wide,

`\advance\linewidth <dimen>` to make it wider.

Particularly this might be useful for right most column when there is a design to the right of the page.

You may want to use this command two times on column to the right side if there is a full height graphic on the right. For example:

```
\advance\linewidth-1in
\begin{itemize}
...
\end{itemize}
and further down:
```

```
\advance\linewidth-2in
\begin{itemize}
...
\end{itemize}
```

Modify the space between columns

`\columnsep = <dimen>` either for multicols within one column, or if before the `\startthreecolumns`, or `\starttwocolumns`, modify the space between the major columns. Can also do `\advance\columnsep<dimen>` or `\advance\columnsep - <dimen>`, which will start with the already set column separation, and make it wider or narrower.

Modify column separation in multicol environment

When using subcolumns within one column, you can change the space between columns by modifying `\colsep`, for instance, `\colsep=12pt` or `\advance\colsep by 6pt` or `\advance\colsep by -6pt`.

Add vertical space between environments within a column

We can add space between environments in columns using `\vskip<dimen>` to add a particular amount of vertical space. We can also add `\vfill` between many elements which will add flexible vertical space to fill out the column.



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Arrow, Objective, Boxed text | Fig and Text; Text and Fig | Side-by-Side | URL, Acknowledgments

These commands are defined in pnnl-posters, to make it easier for you to format your poster. You are welcome to use any other L^AT_EX environment as well.

Arrow between columns

To make an arrow pointing from one subcolumn to the one to the right, you can use the `\setarrow{<dimen>}` command. The dimension will determine position to left or right on the page:

`\setarrow{8in}` or `\setarrow{-12pt}` to move the arrow to the left or right. You will probably have to experiment several times to get the right dimension.

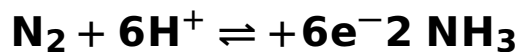
Objective

`\begin{objective}... \end{objective}`

This command will start with a section head reading 'Objective'. It will also use a larger font. The text may have more than one paragraph; the fontsize will be normal sized after `\end{objective}`.

Four Box Environments

`\mathbox{ }`



You may want to use `\mathbox{\mathrm{ math } }` as seen in this example

`\blackbox{ }`

Correlation exists: Available π^* orbital on the nitride (making nitride more electrophilic) leads to more favorable coupling.

`\bluebox{ }`

KEY TAKEAWAY: we predict a series of MO-based complexes with potential to perform NH₃ oxidation and N-N coupling. Future work involves designing less oxophilic systems and exploring other modes of N-N bond formation.

S.I. Johnson et al. Chem. Commun., 2019, 55, 5083–5086

You can change fonts within one of these boxes as you see in the example.

`\posternote{ }`

DFT: B3LYP//6-31G**/SDD on M in Gaussian 09 and ORCA, SMD Solvent: MeCN, energies in kcal/mol, 2,4,6-tri-tert-butylphenoxy radical (ArO[•]) as HAT agent, followed by NBO analysis

`\posternote{ }` is meant to function as a footnote, and should be used at the bottom of the left column.



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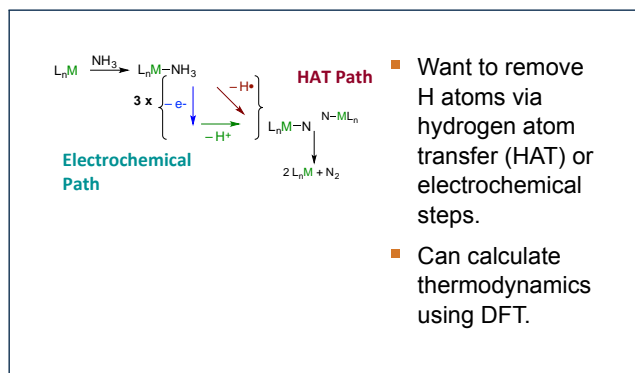
Arrow, Objective, Boxed text | **Fig and Text; Text and Fig** | Side-by-Side | URL, Acknowledgments

Fig and Text; Text and Fig

These two commands measure the width of the graphic and adjust the width of the text box to accommodate the graphic width.

In either of these environments, section head may be used in `<text>` part. Notice that there is a separate argument for the caption. If you don't use a caption, please supply `{}`.

`\figandtext{<graphic>}{<caption>}{<text>}` | `\textandfig{<text>}{<graphic>}{<caption>}`



```
\figandtext{
\includegraphics[width=4.5in]{epath.pdf}
}%<argument for caption if caption used>
{\begin{itemize}
\item Want to remove H atoms via hydrogen
atom transfer (HAT) or electrochemical steps.
\item
Can calculate thermodynamics using DFT.
\end{itemize}}
```

```
\textandfig{
\section{Approach $\alpha\beta\Gamma\Delta$}
Donec aliquet vel purus in cursus...
\begin{itemize}\item Nunc eget dolor blandit, ... \end{itemize}}
{\includegraphics{figsamp-TallNarrowImage.pdf}}{\caption{Image caption...}}
```

APPROACH $\alpha\beta\Gamma\Delta$

Donec aliquet vel purus in cursus. Vestibulum quis quam rhoncus, accumsan enim a, iaculis velit. Aliquam aliquam, nisi sed mollis tempor, magna metus facilisis justo, quis adipiscing dui tellus sed mi. Nam sit amet rutrum est, sed placerat tellus. In quis nisi non odio fringilla tincidunt sed sodales nisi. Etiam a tortor vel nisi blandit iaculis.

- Nunc eget dolor blandit, ultrices ipsum vel, sagittis dolor.
- Mauris lacinia eros nec dapibus. Vivamus mauris justo, venenatis ut ornare nec, pharetra at mauris.
- Duis sollicitudin rhoncus nisi.



IMAGE

Image caption (18 pt Arial) Here is some text to demonstrate a caption that has more than one line of text, with math: $\alpha\beta\Gamma\Delta$.



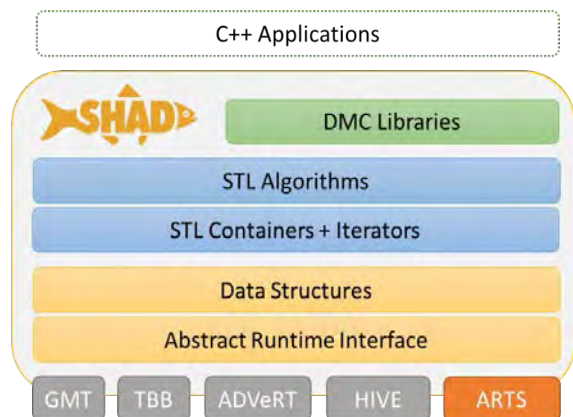
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Arrow, Objective, Boxed text | Fig and Text; Text and Fig | **Side-by-Side** | URL, Acknowledgments

Another command for placing two items next to each other is `\sidebyside{}{}`
This command might be particularly useful when making a one column poster.

PROPOSED SOFTWARE STACK AND FEATURES



Sample table with alternating colored lines

ΔG for coupling and N ₂ Release		
Cr	Mn	Fe
-108.6	-184.1	-194.4
Mo	Tc	Ru
-35.5	-	167.4
W	Re	Os
-13.7	-	-143.7

Here is some of the code that produced this example:

```

\sidebyside{
  \section{Proposed Software Stack and Features}
  \includegraphics[width=.5\columnwidth]
    {colorgraphic.pdf}
}
{
  \tabcolsep=60pt %% space to the right and left of vertical lines
  \tablecaption{Sample table with alternating colored lines}
  \rowcolors{2}{white}{tablelineblue}
  \begin{tabular}{|c|c|c|}
  \hline
  \multicolumn{3}{|c|}{\cellcolor{tabletopblue}
  \boldmath $\Delta G$ for coupling and N2
  Release}\\}
  \hline
  ...
  \hline
  \end{tabular}
}

```




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URL, Acknowledgements

Making a prominent URL

The command to use is `\bigurl{<enter the URL>}`.

This example: `\bigurl{https://github.com/pnnl/SHAD}` will produce the following hyperlinked URL:

<https://github.com/pnnl/SHAD>

Acknowledgements

The only thing to know about acknowledgements is that we want it to appear at the bottom of one of the columns, with a `\vfill` before it.

`\acknowledgements{}` should appear at the bottom of the second column, when using three columns (to assure that the acknowledgement will be centered); at the bottom of the first column when using two columns, and just before `\endonecolumn` if you are using one column.

This code will produce the following graphic:

```
\acknowledgements{This work was supported by the Center for Molecular  
Electrocatalysis, and Energy Frontier Research Center funded by the  
U.S. Department of Energy (U.S. DOE), Office of Science, Office of  
Basic Energy Sciences. Computational resources were  
provided by the Nantional Energy Research Scientific Computing Center  
(NERSC) at Lawrence Berkeley National Laboratory.}
```

Acknowledgements

This work was supported by the Center for Molecular Electrocatalysis, and Energy Frontier Research Center funded by the U.S. Department of Energy (U.S. DOE), Office of Science, Office of Basic Energy Sciences. Computational resources were provided by the Nantional Energy Research Scientific Computing Center (NERSC) at Lawrence Berkeley National Laboratory.



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Tips on entering Graphics

Using `\includegraphics[width=<dimen>]{<illustration filename>}` when making your poster, is the same as using this command in any other LaTeX document. You can use either .pdf or .jpg files.

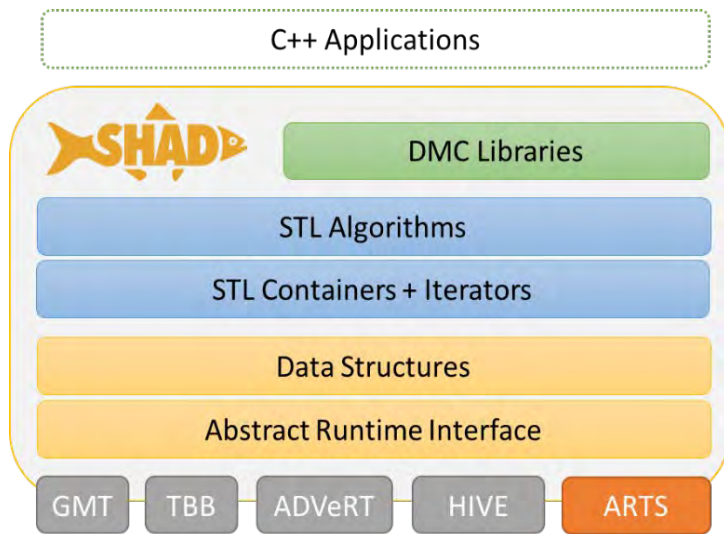
Setting the width appropriate to width of the column

It may not be immediately obvious, but you can set the width of the graphic based on the width of column, or percent of width of column. Either of these commands will work:

```
\includegraphics[width=\columnwidth]{<illustration filename>} or
\includegraphics[width=.5\columnwidth]{<illustration filename>}
or any other percent of the width of the column.
```

Caption

We have a simple `\caption{}` command in the pnnl-posters.cls file. You don't have to be in a `\begin{figure}... \end{figure}` environment; just enter the command below the illustration, when you want a caption.



```
\includegraphics[width=.3\columnwidth]{colorgraphic.pdf}
\caption{Here is a caption. The figure caption should appear below the graphic, \\ as you see in this example.}
```

Here is a caption. The figure caption should appear below the graphic, as you see in this example.



How to make a table with colored rows

We have a few commands that are needed to make a table with colored rows:

- `\tabcolsep<dimen>` Tabcolsep is the space to the right and left of vertical lines. You may want to experiment to get the space adjusted to the size of the poster.
- `\rowcolors{2}{<color one>}{<color two>}` will determine the colors alternating through the table.
- `\cellcolor{tabletopblue}` for the row used for the column headers.
- `\tablecaption{<caption here>}` if wanted, should be used above the table.
- `\color{<color>}` if wanted, may be used within a table column.

Sample table with alternating colored lines

ΔG for coupling and N ₂ Release		
Cr	Mn	Fe
-108.6	-184.1	-194.4
Mo	Tc	Ru
-35.5	–	167.4
W	Re	Os
-13.7	–	-143.7

```
{\tabcolsep=60pt %%
\tablecaption{Sample table with alternating
                colored lines}
\rowcolors{2}{white}{tablelineblue}
\begin{tabular}{|c|c|c|}
\hline
\multicolumn{3}{|c|}{\cellcolor{tabletopblue}
\boldmath $\Delta G$ for coupling and N2$
Release}}\hline
Cr&Mn&Fe\\\hline
-108.6&-184.1&-194.4\\\hline
Mo&Tc&Ru\\\hline
\color{green}-35.5&--&167.4\\\hline
W&Re&Os\\\hline
-13.7& --& -143.7\\\hline
\end{tabular}}
```