

What sort of manuscript is this?

[Rnoweb](#) is a type of *noweb* (“literate programming”) document, where the manuscript text (L^AT_EX in this case) is interspersed with code (R) in the same document (L^AT_EX and R mix particularly nicely [thanks to knitr](#)). For the sake of readability (as well as writeability) we have split the document into multiple source files, all linked to from their parent `000-paper.Rnw`.

To read/inspect the source files we suggest using a modern text editor with support for syntax highlighting of `Rnw` files, such as [VSCodium](#) with the [R](#) and [L^AT_EX Workshop](#) extensions (any recent release will do). VSCodium is freely available, libre licensed software [available for all platforms](#). But any text editor works, really.

Raw data files (optical spectra), derived data files (absorption coefficients, peak fits, etc.) and related data used in this paper are all referenced in (imported by) the R code of the `Rnw` source files. This dataset also includes all images and references (in BIBL^AT_EX format) used in the paper. In short, this dataset contains all the code and all the referenced resources required to reproduce the paper in preprint form.

Some assembly required

The code in this repository has been tested to compile successfully on Linux Ubuntu Focal or Jammy with R v4.0.3 or¹ v4.1.2 and T_EXLive² 2021. To setup R and T_EXLive we recommend you create an Ubuntu Jammy (v22.04) container or virtual machine with at least 3 GB of memory (how to do this depends on your operating system, we recommend [WSL2 on Windows](#) and suggest [LXD](#) or [VirtualBox](#) on other operating systems).

A freshly created Jammy container is expected to have the Ubuntu `universe` repo available, so installing R v4.1.2 is as simple as³:

```
$ sudo apt update
$ sudo apt install --no-install-recommends r-base r-base-dev build-essential
```

To install T_EXLive 2021, we suggest the following steps:⁴

```
# create texlive directory and make it user-writeable
$ sudo mkdir /usr/local/texlive
$ sudo chown -R <yourusername>:<yourusername> /usr/local/texlive
# download and install TeXLive 2021 (around 7 GB, takes a while)
$ wget ftp://tug.org/historic/systems/texlive/2021/tlnet-final/install-tl.zip
$ unzip install-tl.zip
$ cd install-tl-20220322/
$ ./install-tl -repository ftp://tug.org/historic/systems/texlive/2021/tlnet-final
```

The manuscript also requires the Liberation Sans font:

```
$ sudo apt install fonts-liberation fonts-liberation2
```

Then clone [this Git repository](#), restore its R environment,⁵ and enjoy your reproduction:

```
$ git clone https://github.com/solarchemist/preprint-repro-jpcc2020
$ cd preprint-repro-jpcc2020
$ R
> renv::restore()
> quit()
$ ./compile.sh
```

¹Any version *between* 4.0.3 and 4.1.2 (inclusive) should also work. Note that [R v4.2.1 introduced a change](#) that is incompatible with this project, which we have confirmed breaks installation of the MASS package. R v4.2.0 is also incompatible with this project due to [a bug in the stringi package](#).

²More recent releases of T_EXLive unfortunately fail to compile this document.

³It is always possible to [install a specific R version from source](#). But using `apt` is much easier.

⁴As suggested by [Witiko on TeX.SE](#).

⁵Note that the `renv.lock` file in this repository specifies R v4.0.3, so any other R version will produce a warning about version mismatch (that you can safely ignore).