

photobiologyFilters Version 0.1.7

User Guide

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1 Introduction

We have developed a set of packages to facilitate the calculation of many different quantities that can be derived from spectral irradiance data. The basic package is called `photobiology`, and the package described here adds transmittance data for some frequently used filters, and a function for interpolating.

2 Installation and use

The functions in the package `photobiologyFilters` are made available by installing the packages `photobiologyFilter` (once) and loading it from the library when needed.

To load the package into the workspace we use `library(photobiologyFilter)`.

```
library(photobiologyFilters)

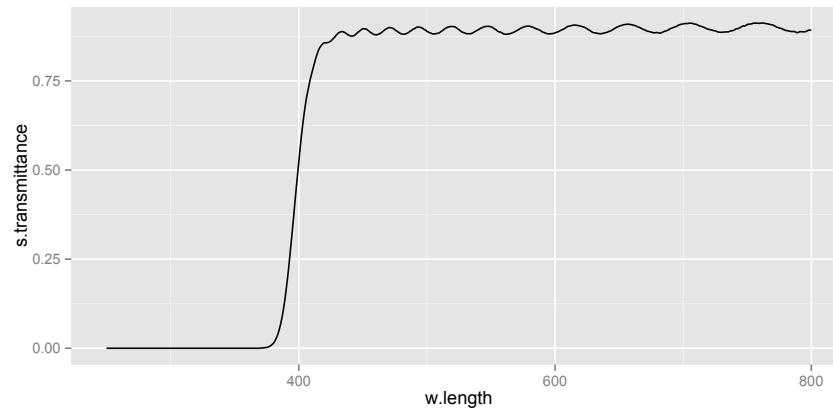
## Loading required package: photobiology
##
## Attaching package: 'photobiologyFilters'
##
## The following object is masked from 'package:photobiology':
##
##   calc_filter_multipliers

library(ggplot2)
```

3 Plotting the transmittance spectrum of a filter

```
w.length <- 250:800
s.transmittance <- calc_filter_multipliers(w.length, "uv.226.new")
uv.226.data <- data.frame(w.length, s.transmittance)
rm(w.length, s.transmittance)
```

```
ggplot(data = uv.226.data, aes(x = w.length, y = s.transmittance)) +
  geom_line()
```



4 Convoluting spectral irradiance with filter transmittance

```
data(sun.data)
attach(sun.data)
```

```
canary.s.irrad <- s.e.irrad * calc_filter_multipliers(w.length,
  "canary.yellow.new")
polyester.s.e.irrad <- s.e.irrad * calc_filter_multipliers(w.length,
  "polyester.new")
uv.226.s.e.irrad <- s.e.irrad * calc_filter_multipliers(w.length,
  "uv.226.new")
filtered.sun.data <- data.frame(w.length = rep(w.length,
  4), s.e.irrad = c(s.e.irrad, canary.s.irrad, polyester.s.e.irrad,
  uv.226.s.e.irrad), filter = factor(rep(c("none", "Canary",
  "Polyester", "#226"), rep(length(w.length), 4))))
```

```
ggplot(data = filtered.sun.data, aes(x = w.length, y = s.e.irrad,
  colour = filter)) + geom_line()
```

