photobiologyLamps Version 0.1.3
Catalogue of Lamps

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1 Introduction

We will plot the emission spectra of the different lamps for which data is provided in the pacakge. We plot side-by-side the lamp output as spectral energy irradiance and as spectral photon irradiance. All spectra are normalized to an area of one under the whole curve.

```
library(ggplot2)
library(photobiology)
library(photobiologyLamps)
library(photobiologygg)

## Loading required package:  proto
## Loading required package:  splus2R
```

We define a function to do the actual plotting so as to not repeat code, and to make changes easier in the future.

```
lamp.plotter <- function(lamp.name, w.low = 250, w.high = 900, scaled = "area") {
    w.length.out <- seq(from = w.low, to = w.high, length.out = 300)
    e.spectrum.data <- calc_lamp_output(w.length.out = w.length.out, lamp.name = lamp.name,
        unit.out = "energy", scaled = scaled)
    q.spectrum.data <- calc_lamp_output(w.length.out = w.length.out, lamp.name = lamp.name,
        unit.out = "photon", scaled = scaled)
    e.spectrum.data <- na.omit(e.spectrum.data)
    q.spectrum.data <- na.omit(q.spectrum.data)
    fig_energy <- ggplot(aes(x = w.length, y = s.irrad), data = e.spectrum.data) +
        xlim(w.low, w.high) + labs(x = "Wavelength (nm)", y = "Spectral energy irradiance\n(rel. units)",
        title = lamp.name) + geom_line() + stat_peaks(ignore_threshold = 0.33,
        colour = "red")
    fig_photon <- ggplot(aes(x = w.length, y = s.irrad), data = q.spectrum.data) +
        xlim(w.low, w.high) + labs(x = "Wavelength (nm)", y = "Spectral photon irradiance\n(rel. units)",
        title = lamp.name) + geom_line() + stat_peaks(ignore_threshold = 0.33,
        colour = "red")
    print(fig_energy)
    print(fig_photon)
}
```

2 UV-B lamp spectra

```r
UVB.lamps <- c("philips.tl01.bentham", "philips.tl12.bentham")
for (lamp in UVB.lamps) {
    lamp.plotter(lamp.name = lamp)
}
```
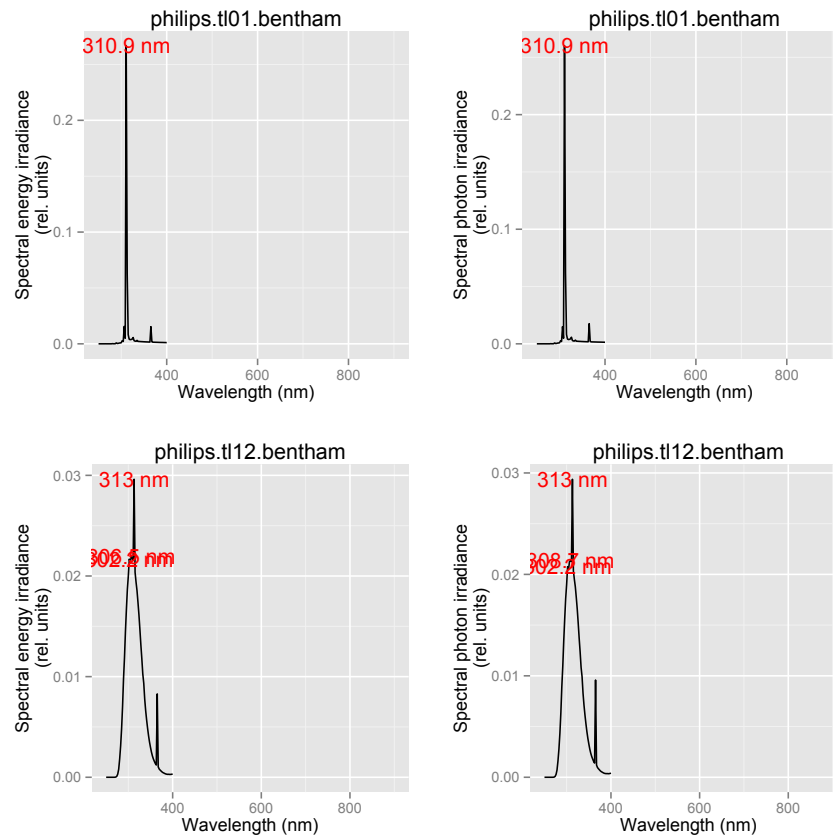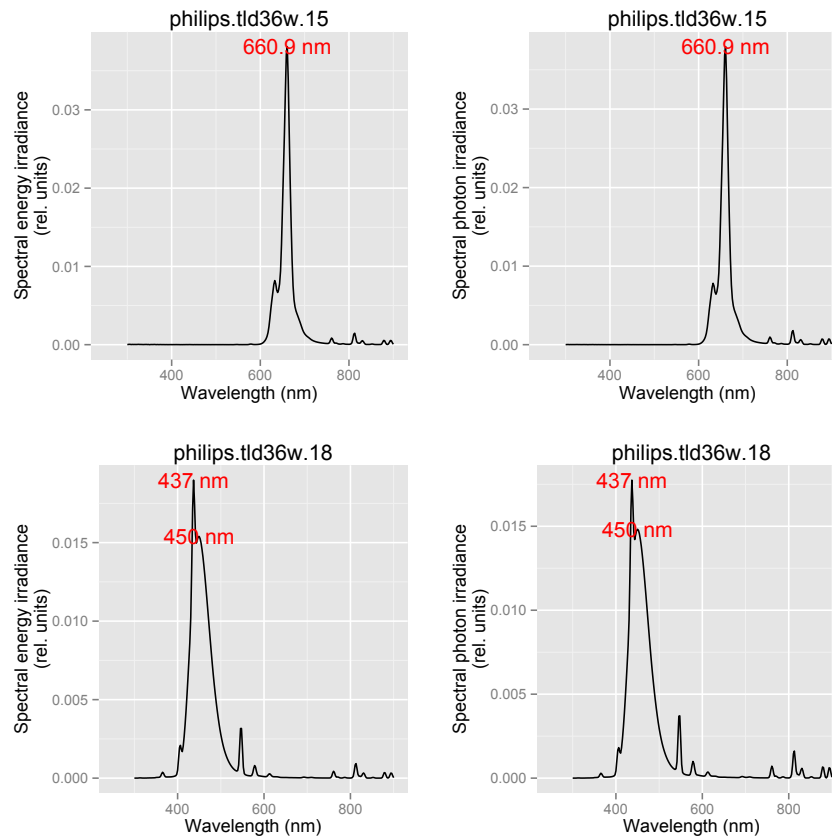

3 UV-A lamp spectra

```r
UVA.lamps <- c()
for (lamp in UVA.lamps) {
    lamp.plotter(lamp.name = lamp)
}
```

4 Narrow spectrum VIS lamps

```
colour.lamps <- c("philips.tld36w.15", "philips.tld36w.18")
for (lamp in colour.lamps) {
    lamp.plotter(lamp.name = lamp)
}
```


5   Broad VIS lamps

```
white.lamps <- c("incandescent.60w", "osram.36w.25", "philips.pls11w.827", "philips.tld36w.83",
    "philips.tld36w.865", "philips.tld36w.89", "philips.tld36w.92", "philips.tll36w.950",
    "sylvania.215w.vho")
for (lamp in white.lamps) {
    lamp.plotter(lamp.name = lamp)
}
```