photobiologyFilters Version 0.1.9
Catalogue of filters

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1 Introduction

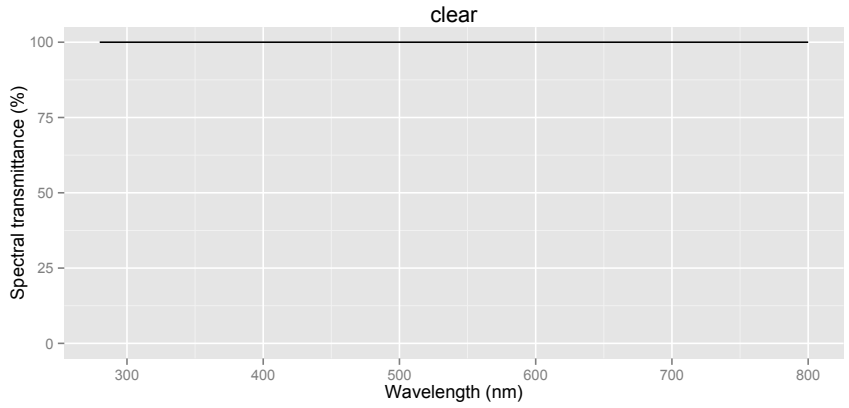
```
library(ggplot2)
library(photobiologyFilters)

## Loading required package:  photobiology
## Loading required package:  lubridate
## Loading required package:  data.table
##
## Attaching package:  'data.table'
##
## The following objects are masked from 'package:lubridate':
##
##    hour, mday, month, quarter, wday, week, yday, year

library(photobiologygg)

## Loading required package:  proto
## Loading required package:  splus2R
## Loading required package:  plyr
##
## Attaching package:  'plyr'
##
## The following object is masked from 'package:lubridate':
##
##    here
```

```
filter.plotter <- function(filter_name, w.low=280, w.high=800,
                           ylab="Spectral transmittance (%)"){
  spectrum.data <- data.frame(w.length=seq(280, 800, length.out=300))
spectrum.data$transmittance <- calc_filter_multipliers(spectrum.data$w.length, filter_name, pc.out=TRUE)
fig_linear <- ggplot(aes(x=w.length, y=transmittance), data=spectrum.data) +
  labs(x="Wavelength (nm)", y=ylab, title=filter_name) + ylim(0,100) +
  geom_line()
# fig_log <- fig_linear + scale_y_log10(limits=c(1e-5,30))
print(fig_linear + stat_peaks(span=71, ignore_threshold=0.25, colour="red", hjust=0, angle=90) +
        stat_valleys(span=51, ignore_threshold=-0.5, colour="blue", hjust=0, angle=90))
# print(fig_log)
}
```

2 Dummy filters

2.1 Perfectly clear filter

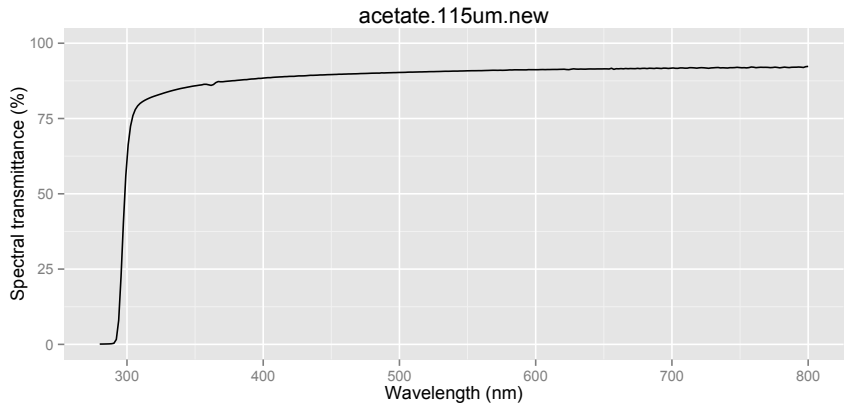
```
filter.plotter("clear")
```

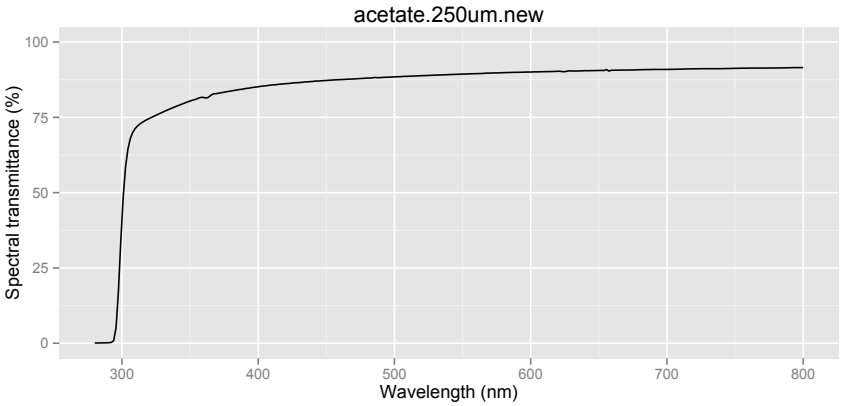


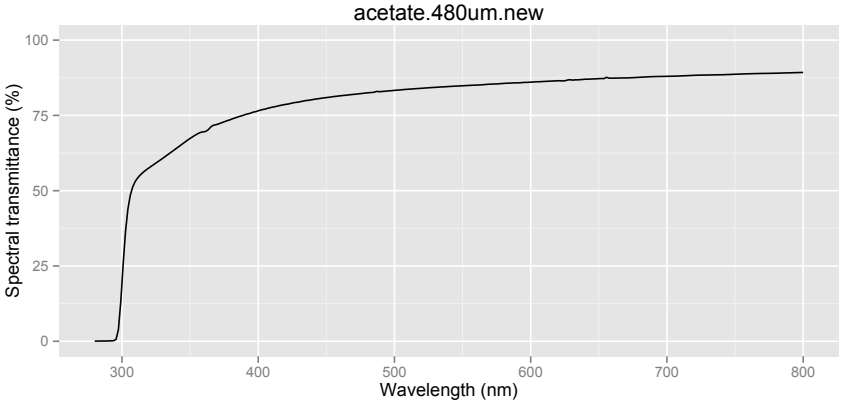
3 Plastic films

3.1 Cellulose diacetate

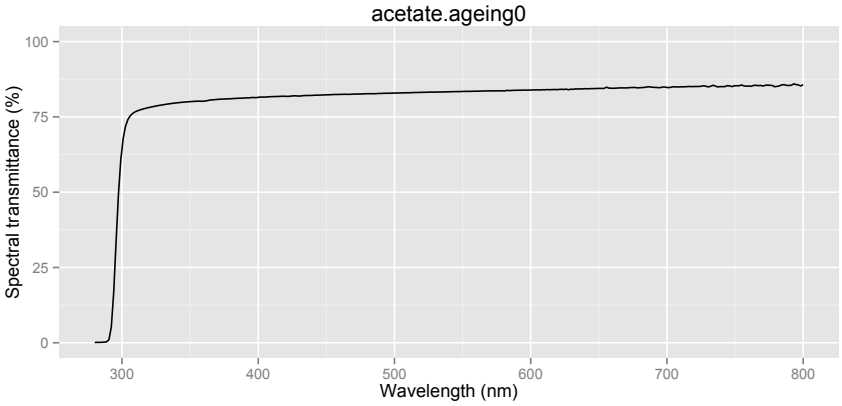
```
for (filter in c("acetate.115um.new", "acetate.250um.new", "acetate.480um.new")) {
  filter.plotter(filter)
}
```

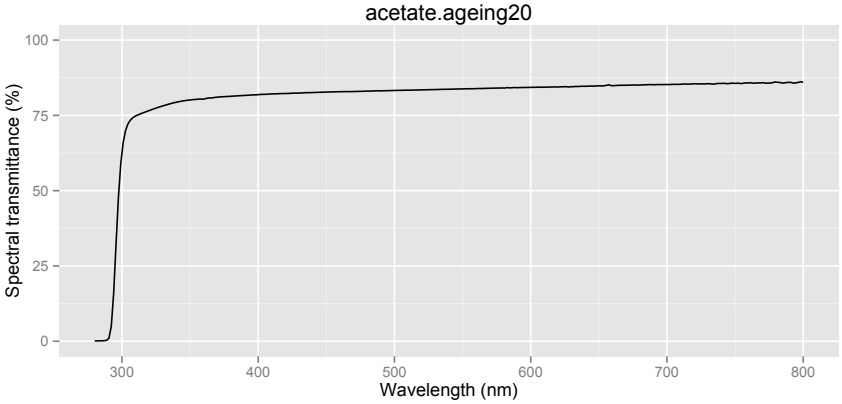


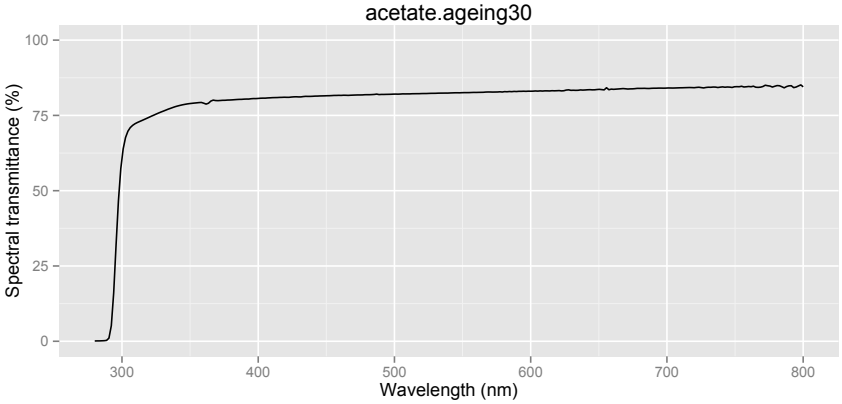


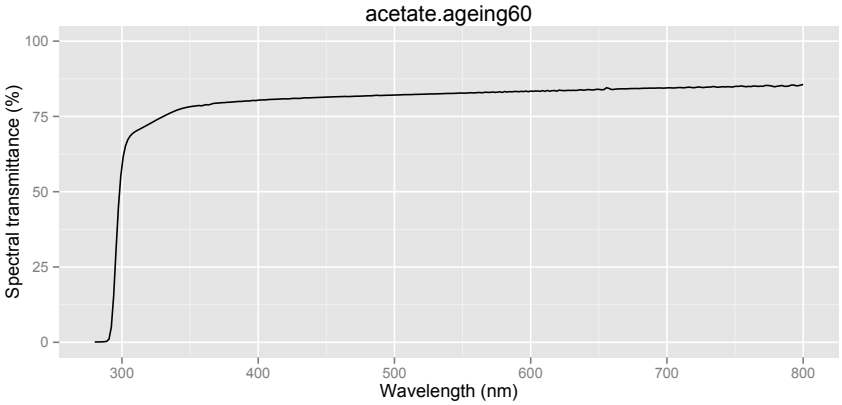


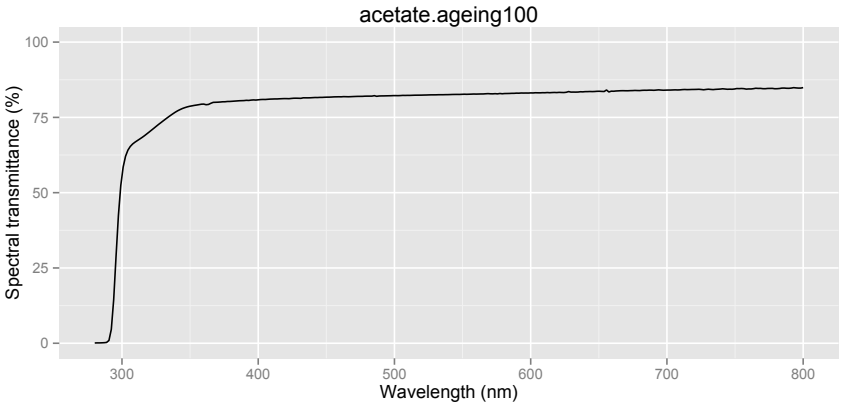

```
for (filter in c("acetate.ageing0", "acetate.ageing20", "acetate.ageing30", "acetate.ageing60", "acetate.ageing10
  filter.plotter(filter)
}
```

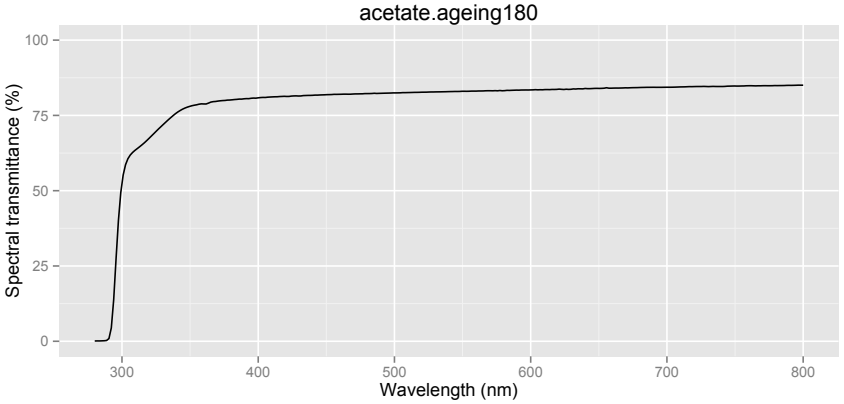


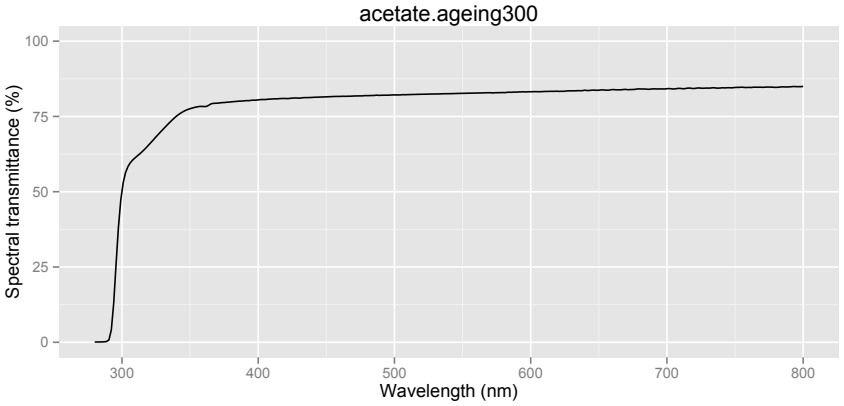

acetate.ageing20
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


acetate.ageing30
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


acetate.ageing60
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)

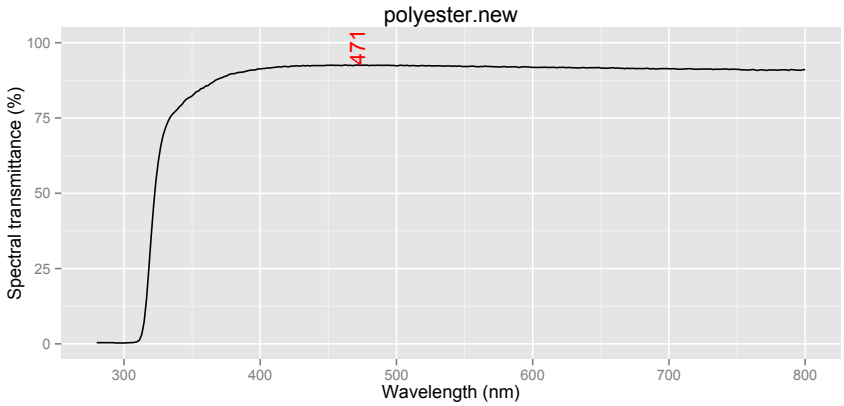

acetate.ageing100
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


acetate.ageing180
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


acetate.ageing300
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)

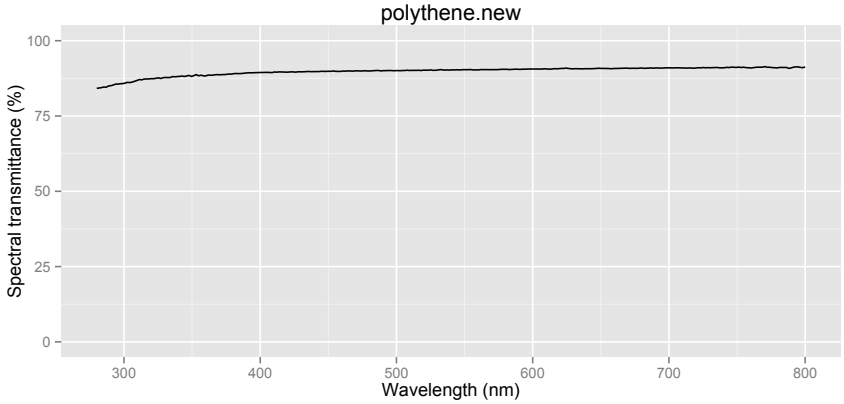
3.2 Polyester

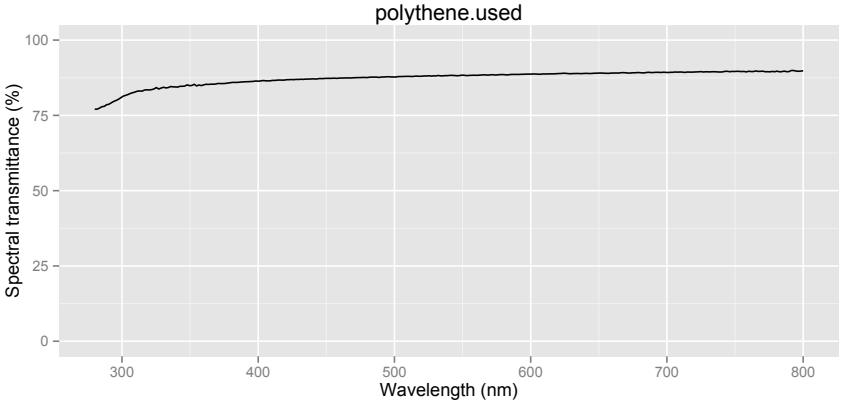
```
filter.plotter("polyester.new")
```



3.3 Polythene

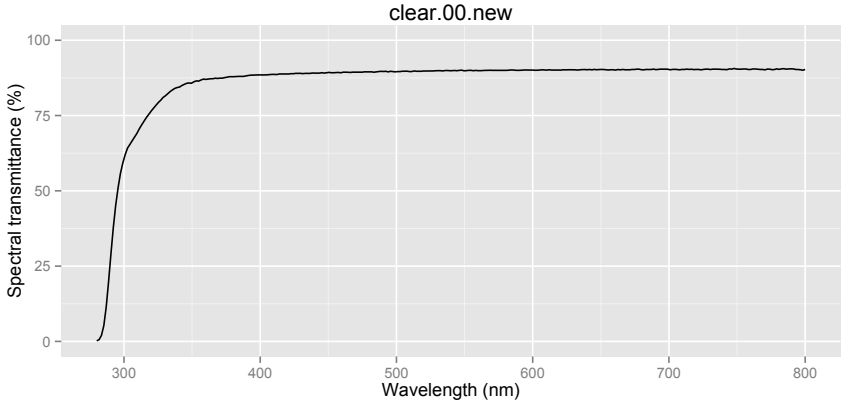
```
filter.plotter("polythene.new")
filter.plotter("polythene.used")
```

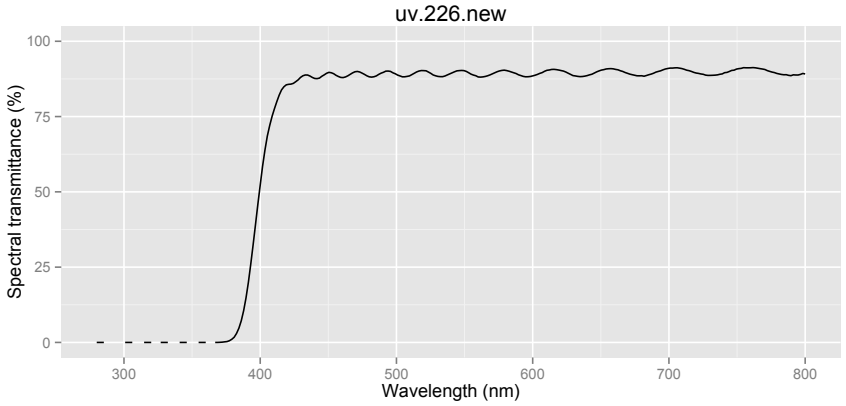


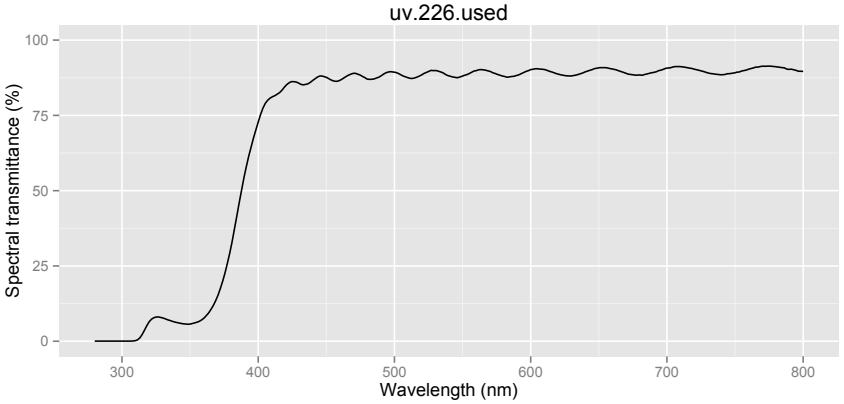

polythene.used
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)

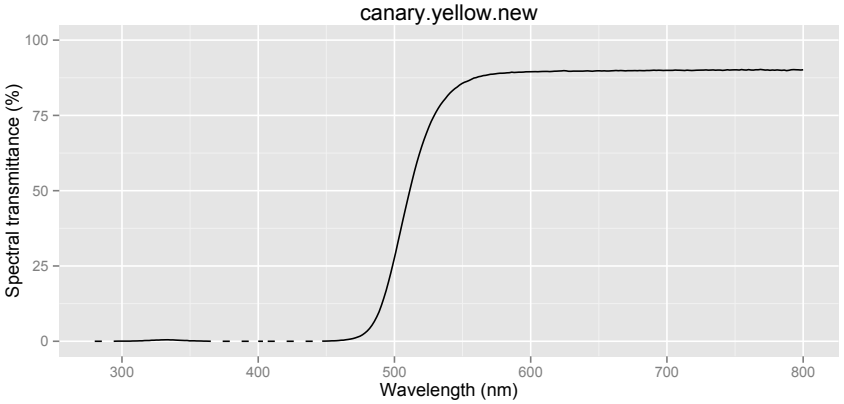
3.4 Rosco theatrical filters

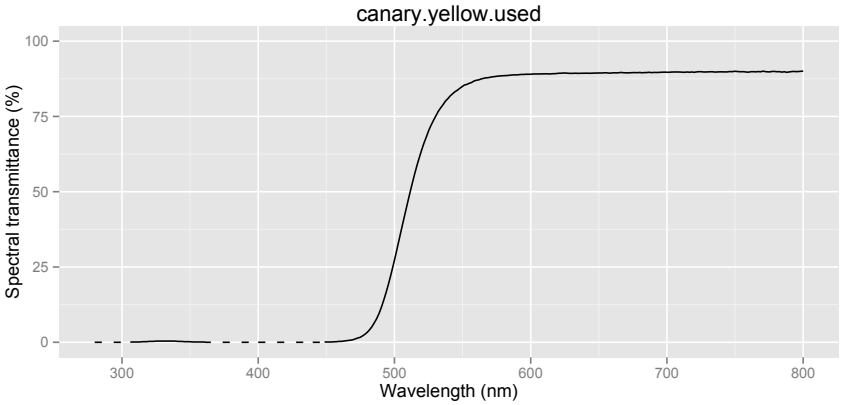
```
for (filter in c("clear.00.new", "uv.226.new", "uv.226.used", "canary.yellow.new",
                 "canary.yellow.used", "rose.pink.new", "neon.pink.used",
                 "moss.green.new", "moss.green.used")) {
  filter.plotter(filter)
}
```

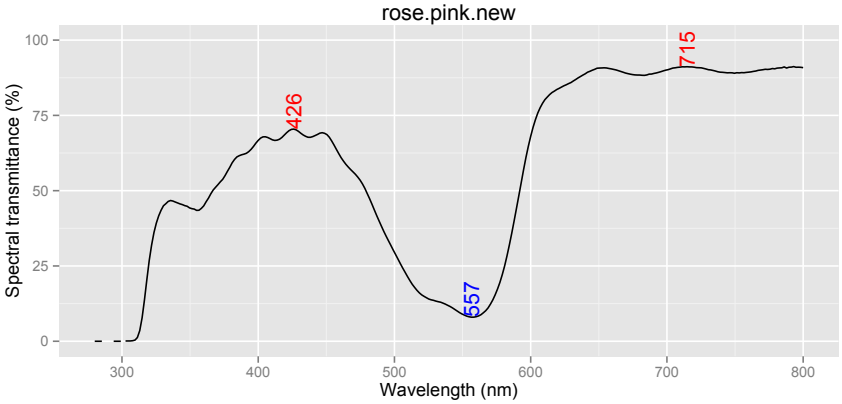


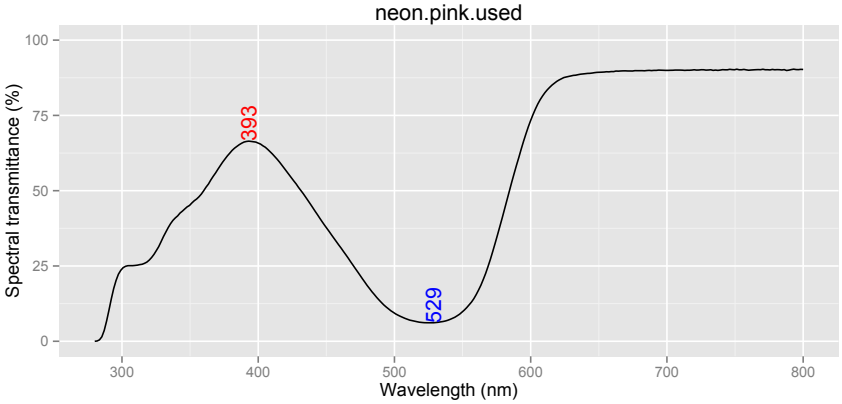


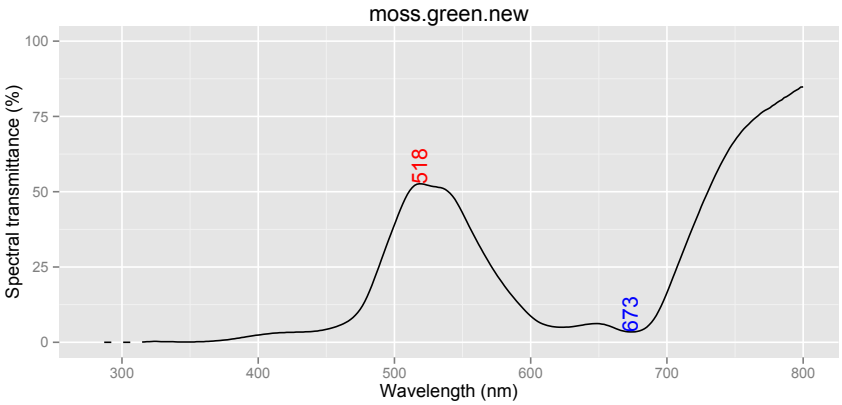

uv.226.used
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)

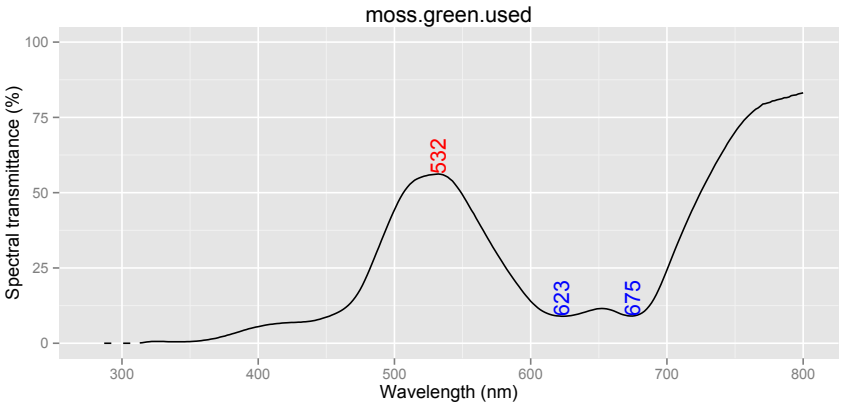

canary.yellow.new
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


canary.yellow.used
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)


rose.pink.new
Spectral transmittance (%)
100
75
50
25
0
426
557
715
300
400
500
600
700
800
Wavelength (nm)

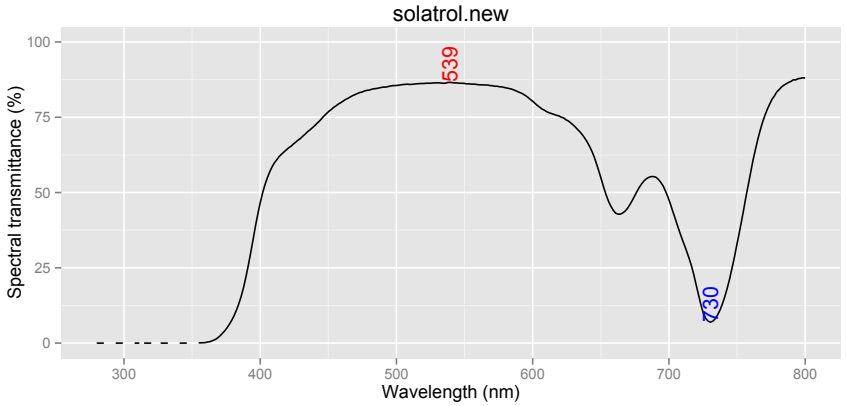

neon.pink.used
Spectral transmittance (%)
100
75
50
25
0
393
529
300
400
500
600
700
800
Wavelength (nm)

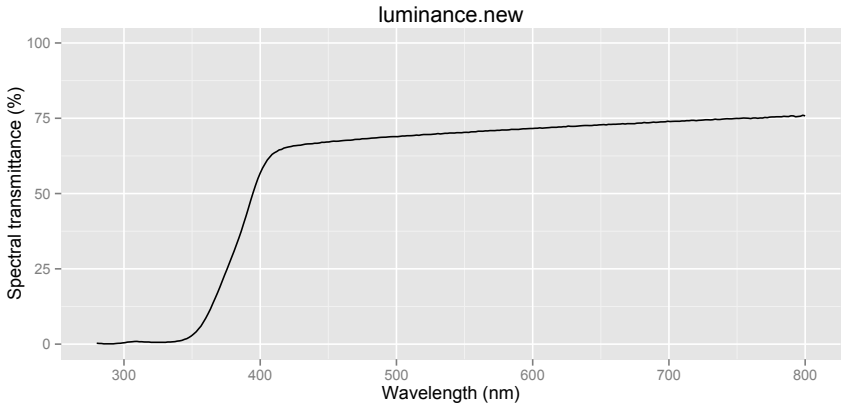

moss.green.new
Spectral transmittance (%)
100
75
50
25
0
518
673
300
400
500
600
700
800
Wavelength (nm)


moss.green.used
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)
532
623
675

3.5 Commercial greenhouse films from BPI Agri Visqueen

```
for (filter in c("solatrol.new", "luminance.new")) {
  filter.plotter(filter)
}
```

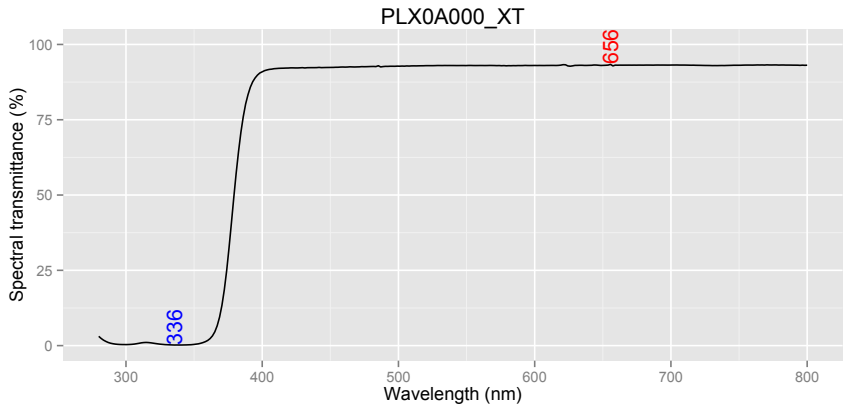


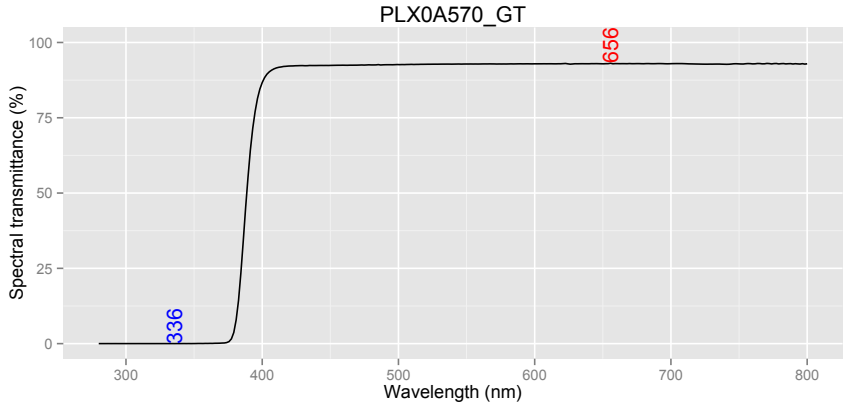


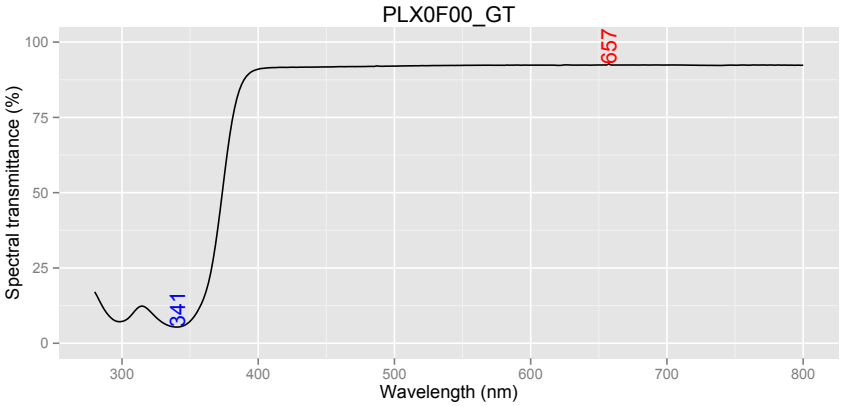
4 Plastic sheets

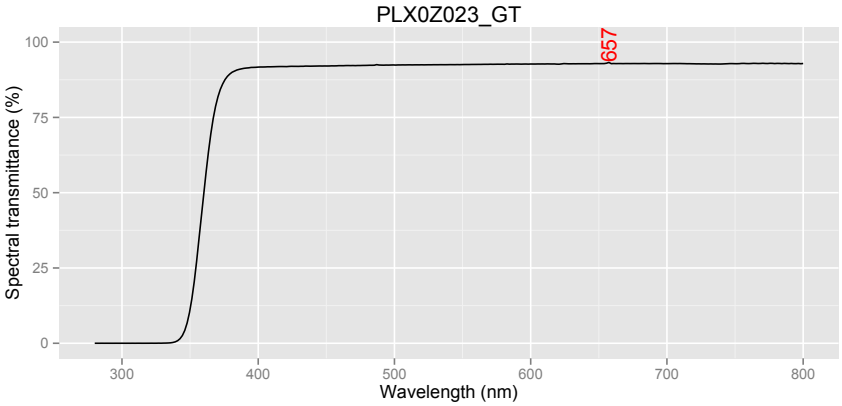
4.1 Plexiglas

```
for (filter in c("PLX0A000_XT", "PLX0A570_GT", "PLX0F00_GT", "PLX0Z023_GT")) {
  filter.plotter(filter)
}
```

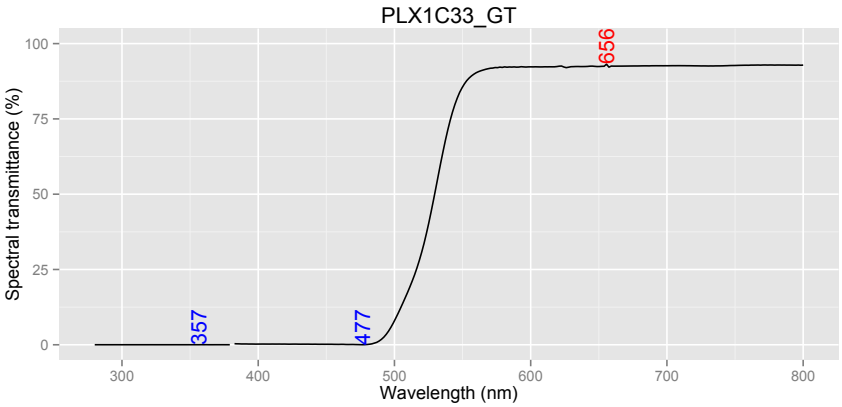


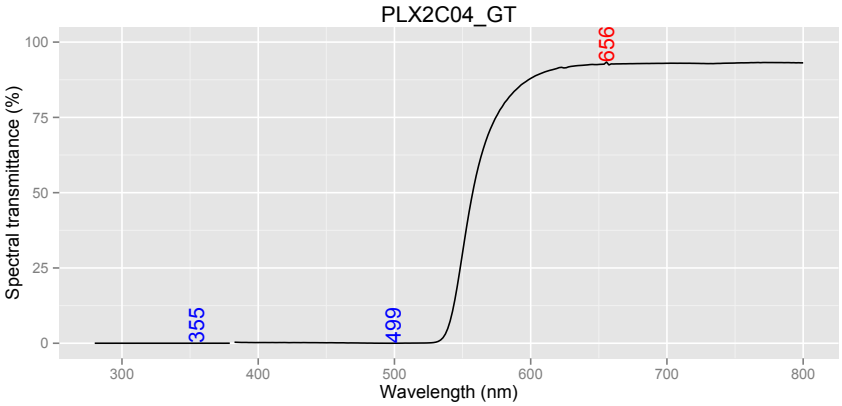


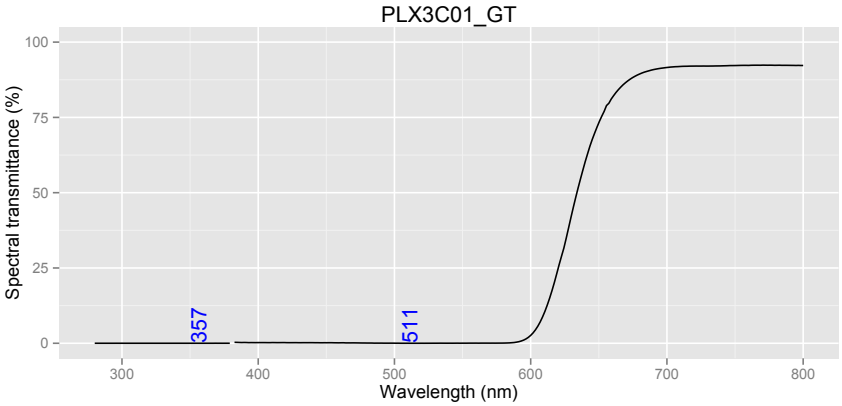


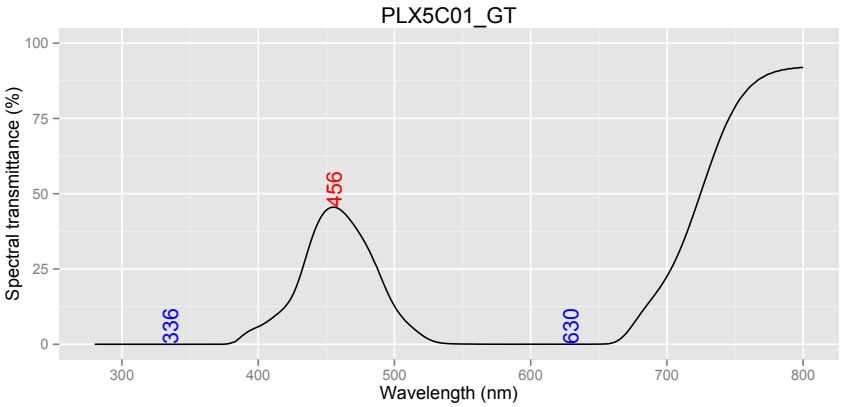



```
for (filter in c("PLX1C33_GT", "PLX2C04_GT", "PLX3C01_GT", "PLX5C01_GT")) {
  filter.plotter(filter)
}
```




PLX2C04_GT
Spectral transmittance (%)
100
75
50
25
0
355
499
656
300
400
500
600
700
800
Wavelength (nm)

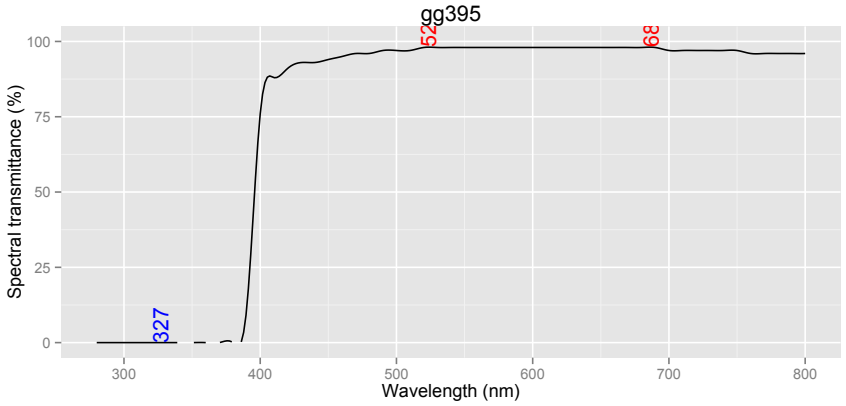

PLX3C01_GT
Spectral transmittance (%)
100
75
50
25
0
357
511
300
400
500
600
700
800
Wavelength (nm)

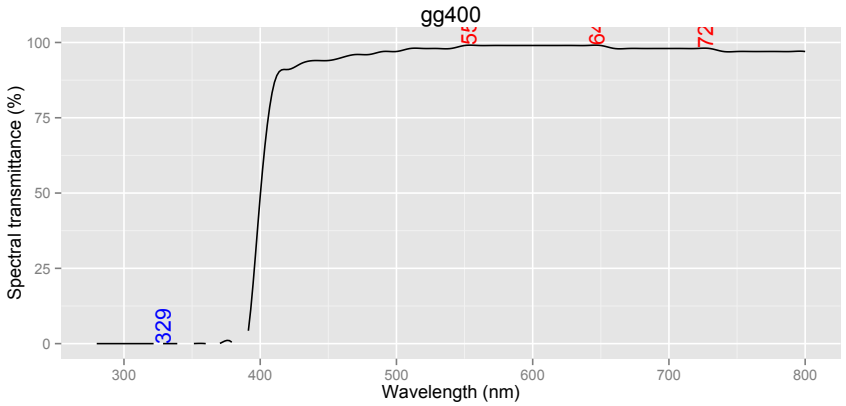

PLX5C01_GT
Spectral transmittance (%)
100
75
50
25
0
336
456
630
300
400
500
600
700
800
Wavelength (nm)

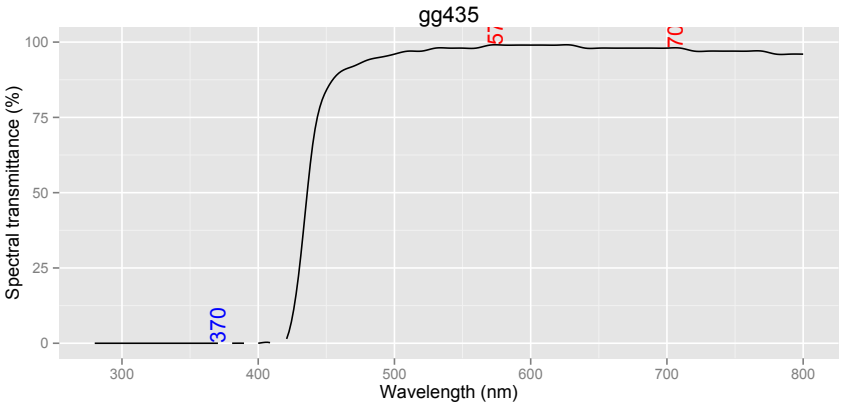
5 Optical glass filters

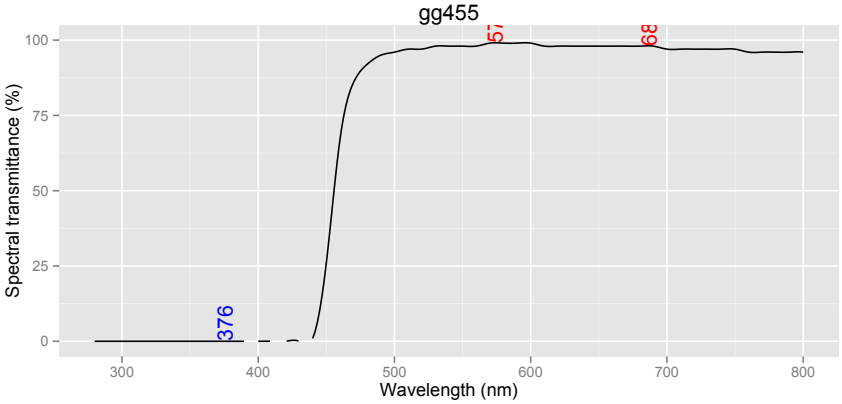
5.1 Schott long-pass filters

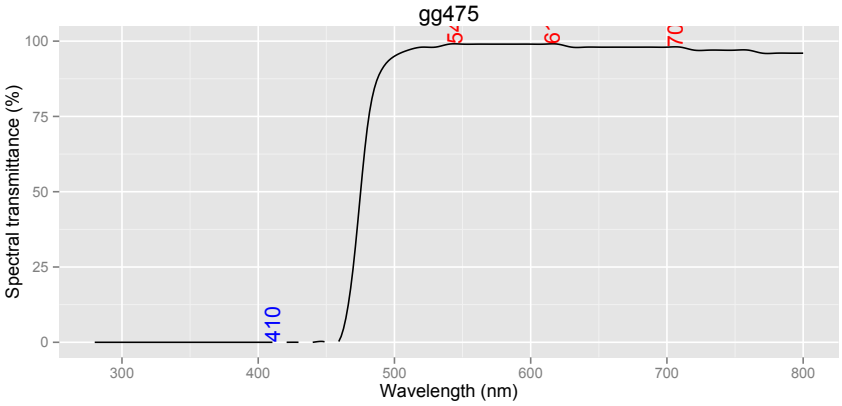
```
for (filter in c("gg395", "gg400", "gg435", "gg455", "gg475", "gg495")) {
  filter.plotter(filter)
}
```

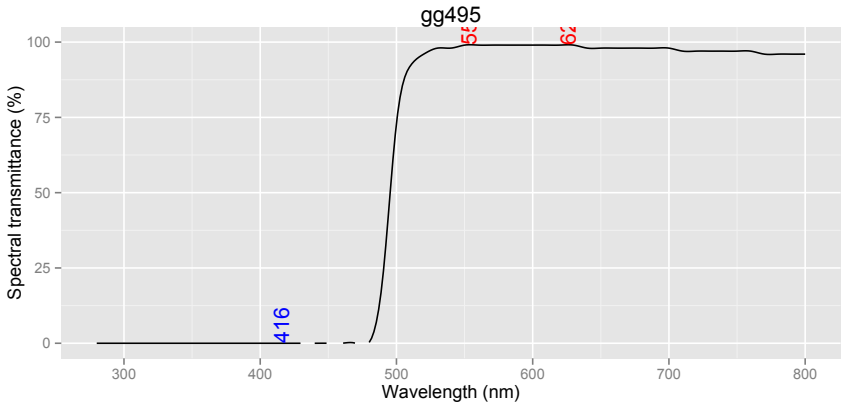





gg435
Spectral transmittance (%)
100
75
50
25
0
370
300
400
500
600
700
800
Wavelength (nm)

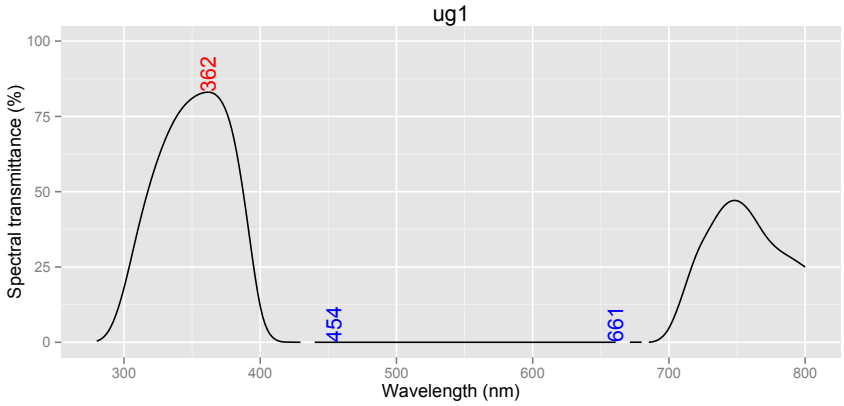

gg455
Spectral transmittance (%)
100
75
50
25
0
376
300
400
500
600
700
800
Wavelength (nm)

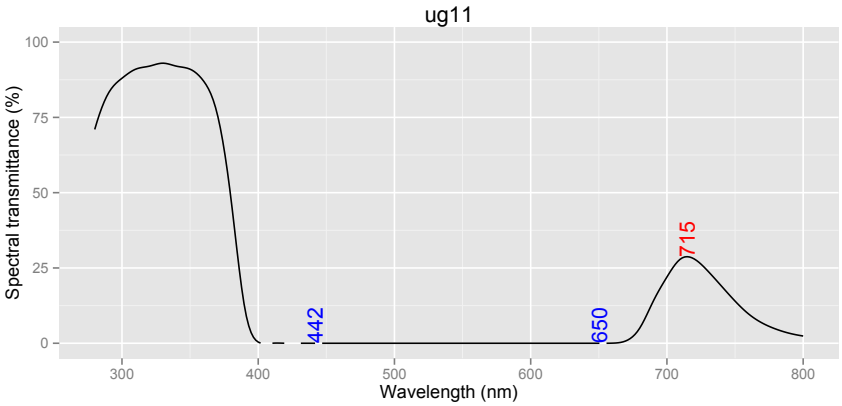

gg475
Spectral transmittance (%)
100
75
50
25
0
410
300
400
500
600
700
800
Wavelength (nm)



5.2 Schott band-pass filters

```
for (filter in c("ug1", "ug11")) {
  filter.plotter(filter)
}
```




ug11
Spectral transmittance (%)
100
75
50
25
0
300
400
500
600
700
800
Wavelength (nm)
442
650
715