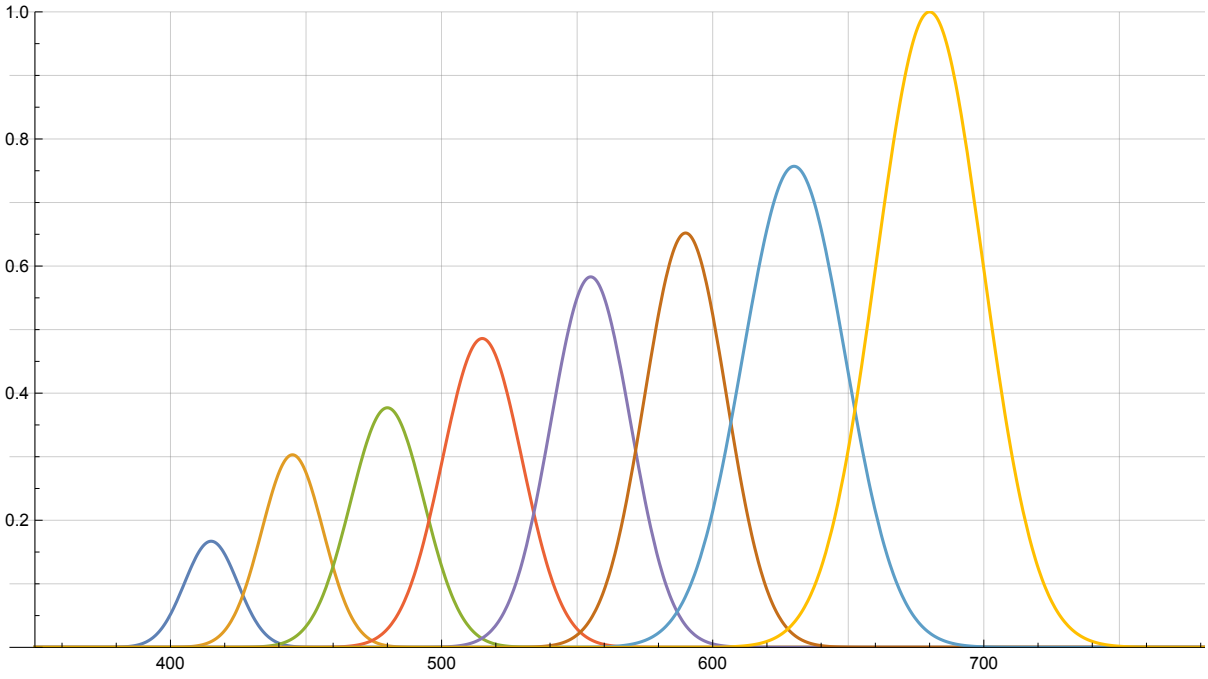
This is channel functions from datasheet: https://cdn.sparkfun.com/assets/0/8/e/2/3/AS7341_DS000504_3-00.pdf

In[1]:=

```
f[x_, mu_, range_, rel_] := Module[{sig},
  sig = -(range^2) / Log[0.03];
  Exp[-(x - mu)^2 / sig] * rel]
f415[x_] := f[x, 415, 26, 0.167];
f445[x_] := f[x, 445, 30, 0.303];
f480[x_] := f[x, 480, 36, 0.377];
f515[x_] := f[x, 515, 39, 0.486];
f555[x_] := f[x, 555, 39, 0.583];
f590[x_] := f[x, 590, 40, 0.652];
f630[x_] := f[x, 630, 50, 0.757];
f680[x_] := f[x, 680, 52, 1];
Exp[-((x - mu)^2) / (2 * sig^2)];
Plot[{f415[x], f445[x], f480[x], f515[x], f555[x], f590[x], f630[x], f680[x]}
 , {x, 350, 800}, PlotRange → {0, 1 }, AspectRatio → 1 / 2,
 GridLines → {Range[350, 800, 50], Range[0, 1, 0.1]}]
```

Out[11]=



Utilitary function to print result c++ functions

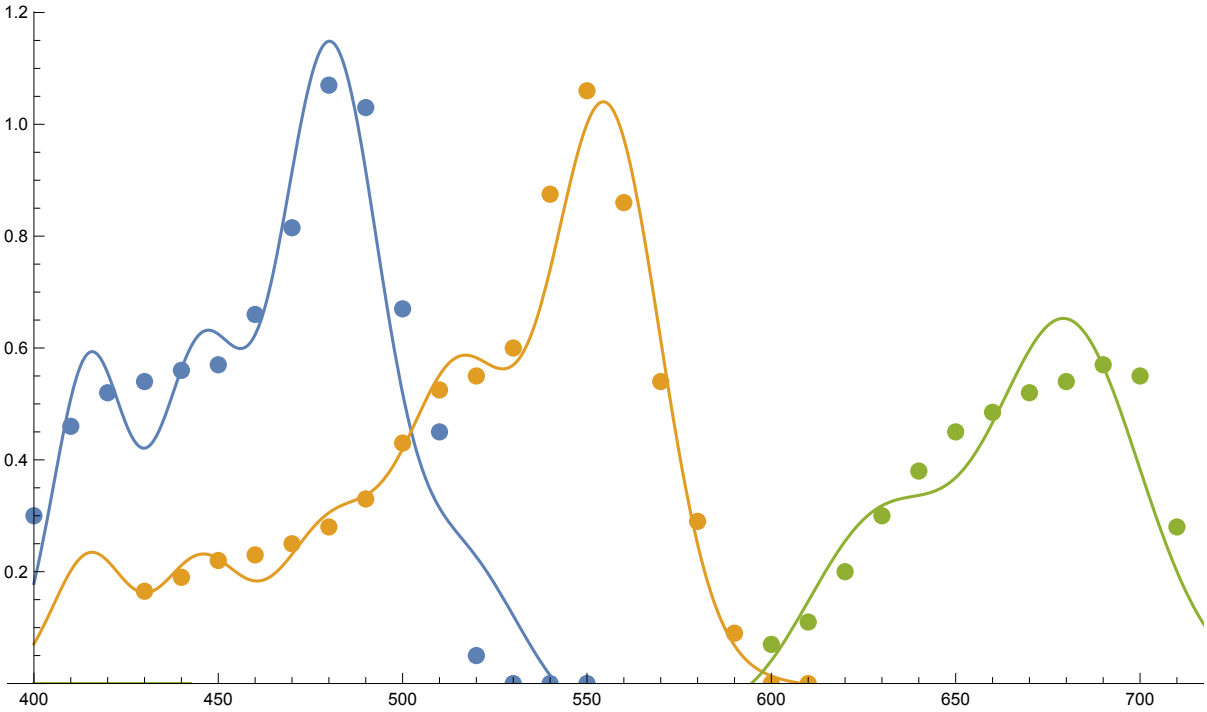
In[12]:=

```
printChanelCodeFunc[fit_] := StringRiffle[Table[
    ToString[r[[2]], InputForm] <> "f * ch" <> SymbolName[r[[1]]], {r, fit}], " + "];
```

Raw set of prints from Fuji Crystal Spectral Dye density curves: https://asset.fujifilm.com/www/us/files/2020-02/04d1bef46c15a1881cb15f3e3a9f46d1/Fujicolor_Crystal_Archive_Paper_Pearl.pdf

In[13]:=
```
bluePoints = {{400, 0.3}, {410, 0.46}, {420, 0.52}, {430, 0.54}, {440, 0.56},
    {450, 0.57}, {460, 0.66}, {470, 0.815}, {480, 1.07}, {490, 1.03},
    {500, 0.67}, {510, 0.45}, {520, 0.05}, {530, 0}, {540, 0}, {550, 0}};

greenPoints = {{430, 0.165}, {440, 0.19}, {450, 0.22}, {460, 0.23},
    {470, 0.25}, {480, 0.28}, {490, 0.33}, {500, 0.43}, {510, 0.525},
    {520, 0.55}, {530, 0.6}, {540, 0.875}, {550, 1.06}, {560, 0.86},
    {570, 0.54}, {580, 0.29}, {590, 0.09}, {600, 0}, {610, 0}};

redPoints = {{600, 0.07}, {610, 0.11}, {620, 0.2}, {630, 0.3},
    {640, 0.38}, {650, 0.45}, {660, 0.485}, {670, 0.52}, {680, 0.54},
    {690, 0.57}, {700, 0.55}, {710, 0.28}, {720, 0.17}, {730, 0.06}};


blueModelFunction =
  K415 * f415[x] + K445 * f445[x] + K480 * f480[x] + K515 * f515[x] + K555 * f555[x];
greenModelFunction = K415 * f415[x] + K445 * f445[x] + K480 * f480[x] +
    K515 * f515[x] + K555 * f555[x] + K590 * f590[x] + K630 * f630[x];
redModelFunction = K590 * f590[x] + K630 * f630[x] + K680 * f680[x];


blueFit =
  FindFit[bluePoints, blueModelFunction,   {K415, K445, K480, K515, K555}, x];
greenFit = FindFit[greenPoints, greenModelFunction,
    {K415, K445, K480, K515, K555, K590, K630}, x];
redFit = FindFit[redPoints, redModelFunction,      {K590, K630, K680}, x];

blue = blueModelFunction /. blueFit;
green = greenModelFunction /. greenFit;
red = redModelFunction /. redFit;

Show[
 Plot[{blue, green, red}, {x, 400, 750}, PlotRange → {0, 1.202},
  AspectRatio → 1 / 2, GridLines → {xGridLine, yGridLine}],
 ListPlot[{bluePoints, greenPoints, redPoints}]
]
```

Out[25]=



In[26]:=
```
printChanelCodeFunc[SortBy[redFit, First]]
printChanelCodeFunc[SortBy[greenFit, First]]
printChanelCodeFunc[SortBy[blueFit, First]]
```

Out[26]=
```
-0.0812698108293189f * chK590 +
  0.3889645588671796f * chK630 + 0.6435851049073148f * chK680
```

Out[27]=
```
1.3625505596392686f * chK415 +
  0.7230896797200832f * chK445 + 0.7186750494198619f * chK480 +
  1.1292803233662263f * chK515 + 1.7586387114631004f * chK555 +
  0.012904432878220122f * chK590 + -0.013767720765582843f * chK630
```

Out[28]=
```
3.4400423464479277f * chK415 +
  1.9093843426914159f * chK445 + 2.997503714014938f * chK480 +
  0.4701350013652125f * chK515 + -0.11413907320069276f * chK555
```