

```
In[*]:= Charting`$InteractiveHighlighting = False
Out[*]:=
False
```

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## Calibration line

```
In[*]:= titles = {"Background", "Ag", "Fe", "Ge", "Mn", "Ni", "Unknown sample"};
data =
  Dataset[Import[ToString@StringForm["/Users/giovannigravili/Library/Mobile
    Documents/com~apple~CloudDocs/LM
    MANO/Notebooks/XDET/xrdData/`.txt", #], "Table",
    "HeaderLines" → 6, "FieldSeparators" → "\t", "NumberPoint" → ".",
    CharacterEncoding → "UTF8"]][All, Range[1, 2]][
  All, <|"Channel" → 1, "Counts per second (Hz)" → 2|>] & /@
{"Backg", "Ag", "Fe",
 "Ge",
 "Mn",
 "Ni",
 "Sample"};

In[*]:= data2 =
  Transpose[{#[All, "Channel"], #[All, "Counts per second (Hz)"]} // Normal] & /@
data;

In[*]:= cPeaks = FindPeaks[#, Automatic, Automatic, 12] & /@
  (TimeSeriesResample@TimeSeries[#2, {#1}] & @@@
  (Transpose[Take[#, 573]] & /@ data2)) // Normal;

In[*]:= Rule @@@ Transpose[{titles, Column@Flatten@Take[#, All, 1] & /@ cPeaks}] //
  Association // Dataset

Out[*]:=
```

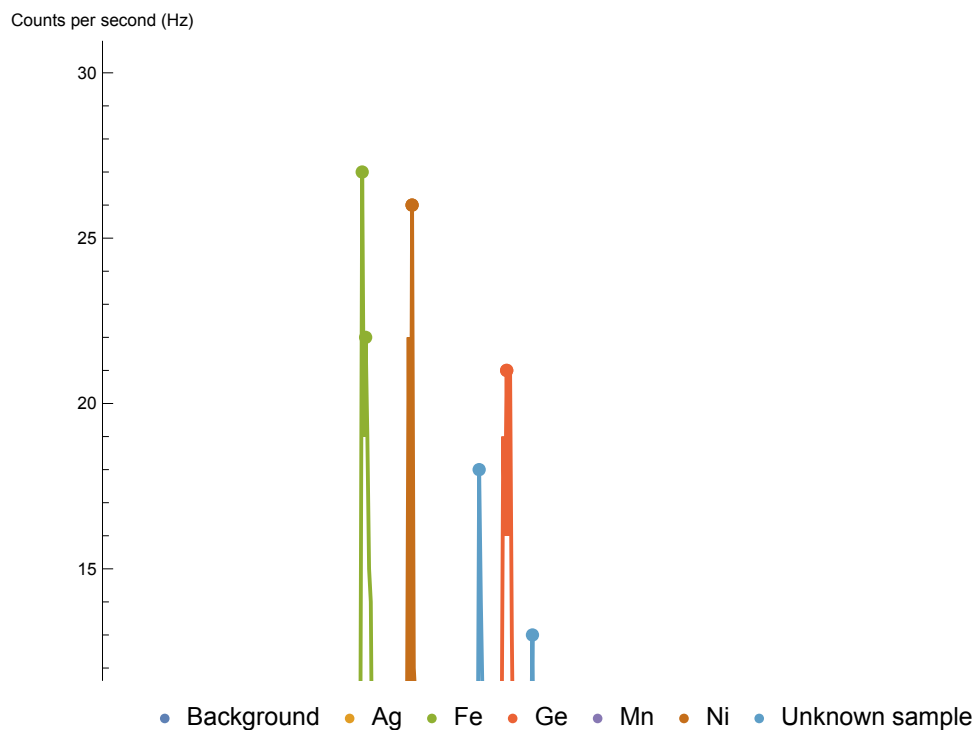
Background	
Ag	521 524
Fe	151 153
Ge	235
Mn	
Ni	180
Unknown sample	219 250

```

In[ ]:= ListLinePlot[Take[#, 573] & /@data2, PlotRange → All,
  AxesLabel → {"Channel", "Counts per second (Hz)"}] //
  Show[#, ListPlot[cPeaks /. { } → {0, 0} // Evaluate,
    PlotLegends → Placed[τ, Below]], ImageSize → Large, PlotRange → {12, 30}] &

```

Out[ ]:=



```

In[ ]:= manData = Transpose[{{524, 151, 235, 180}, {22.163, 6.4, 9.88, 7.48}}];
(* Manually filtered data from the results *)

```

```

In[ ]:= fitfn = LinearModelFit[manData, x, x]

```

Out[ ]:=

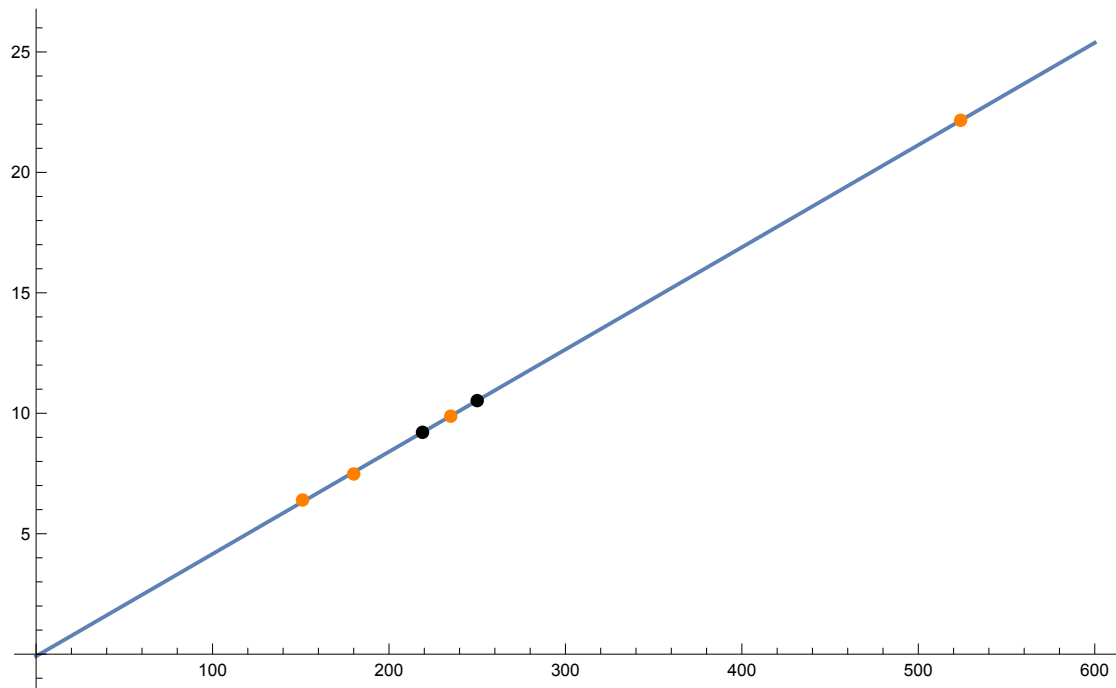
```

FittedModel[ -0.0849263 + 0.0424428 x ]

```

```
In[ ]:= Plot[fitfn[x], {x, 0, 600},
  Epilog -> {PointSize[Large], Orange, Point[manData], Black,
    Point[{#, fitfn[#]} & /@ {219, 250}}], ImageSize -> Large]
```

Out[ ]:=



```
In[ ]:= fitfn[#] & /@ {219, 250} (* It seems like GaAs *)
```

Out[ ]:=

```
{9.21006, 10.5258}
```

```
In[ ]:= gallium arsenide CHEMICAL
```

Out[ ]:=

```
gallium arsenide
```