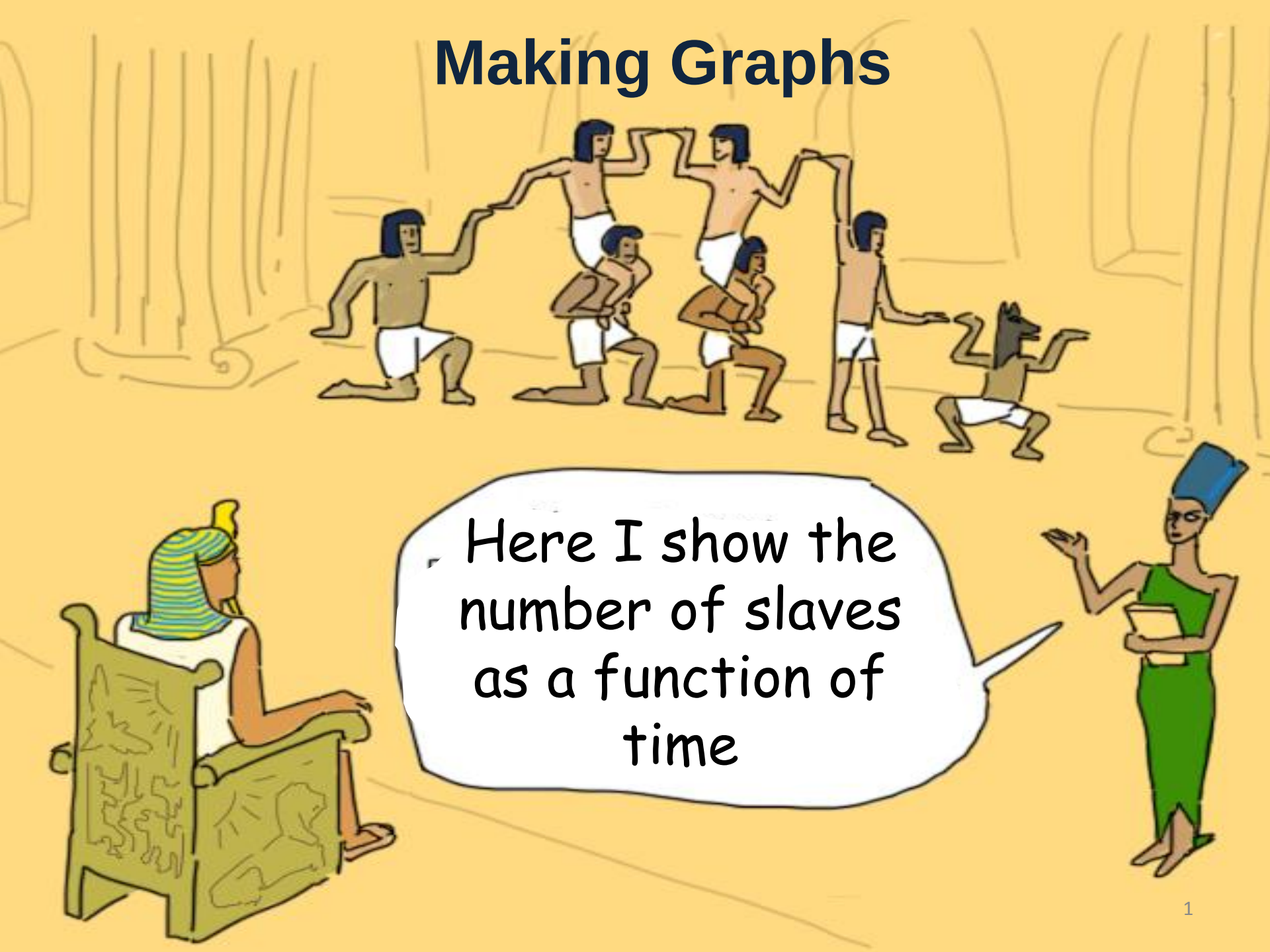
Making Graphs



Why Graphs?

Graphs are a good means of
describing
exploring
summarizing
numerical data

The use of a visual image can **simplify complex information** and **highlight patterns and trends** in the data

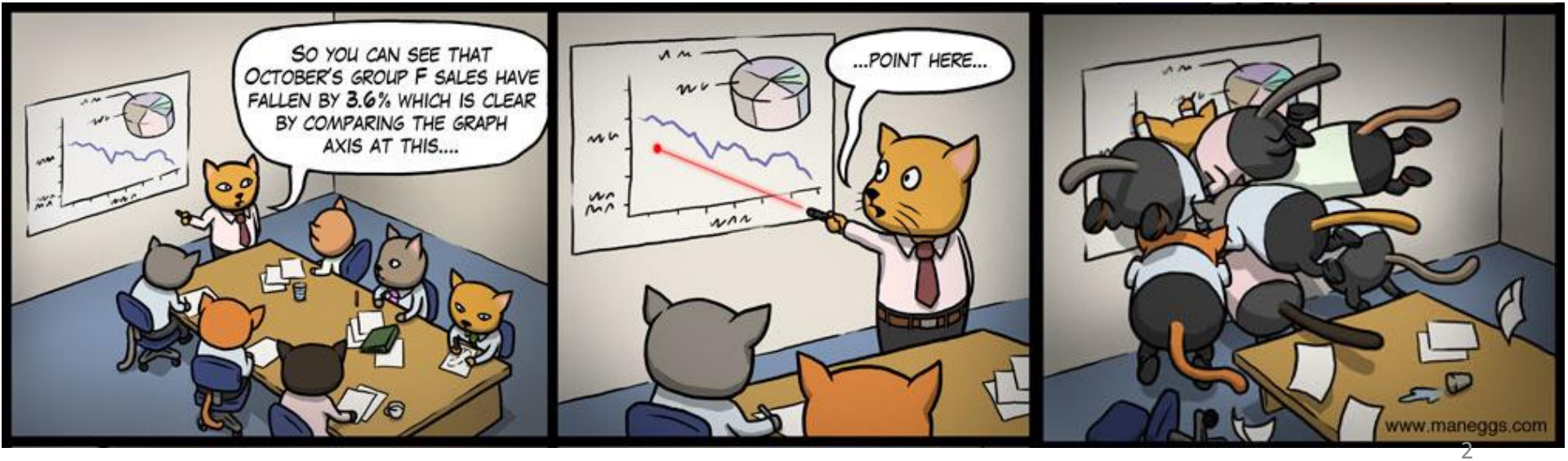
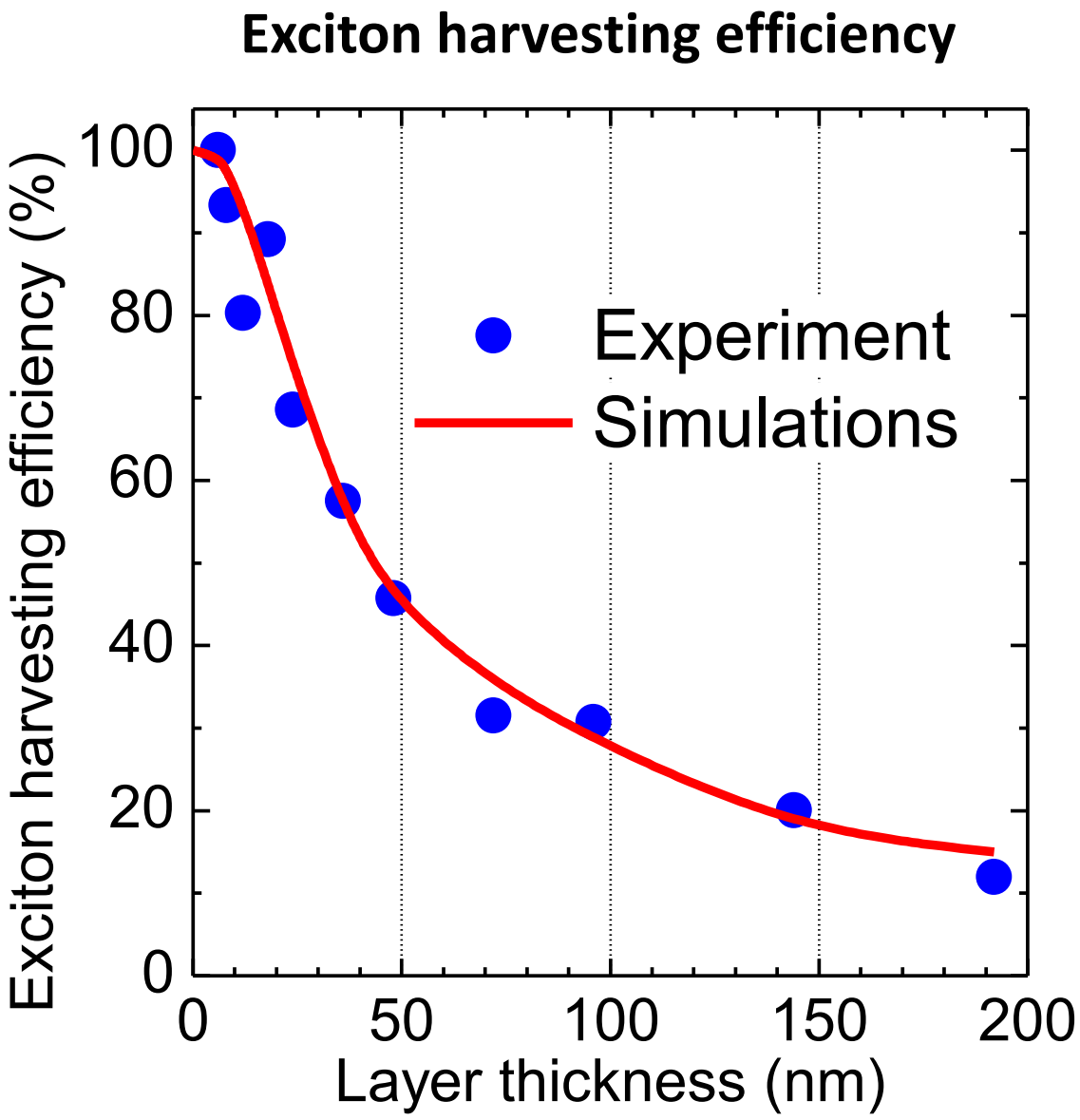


Table Representation of Data

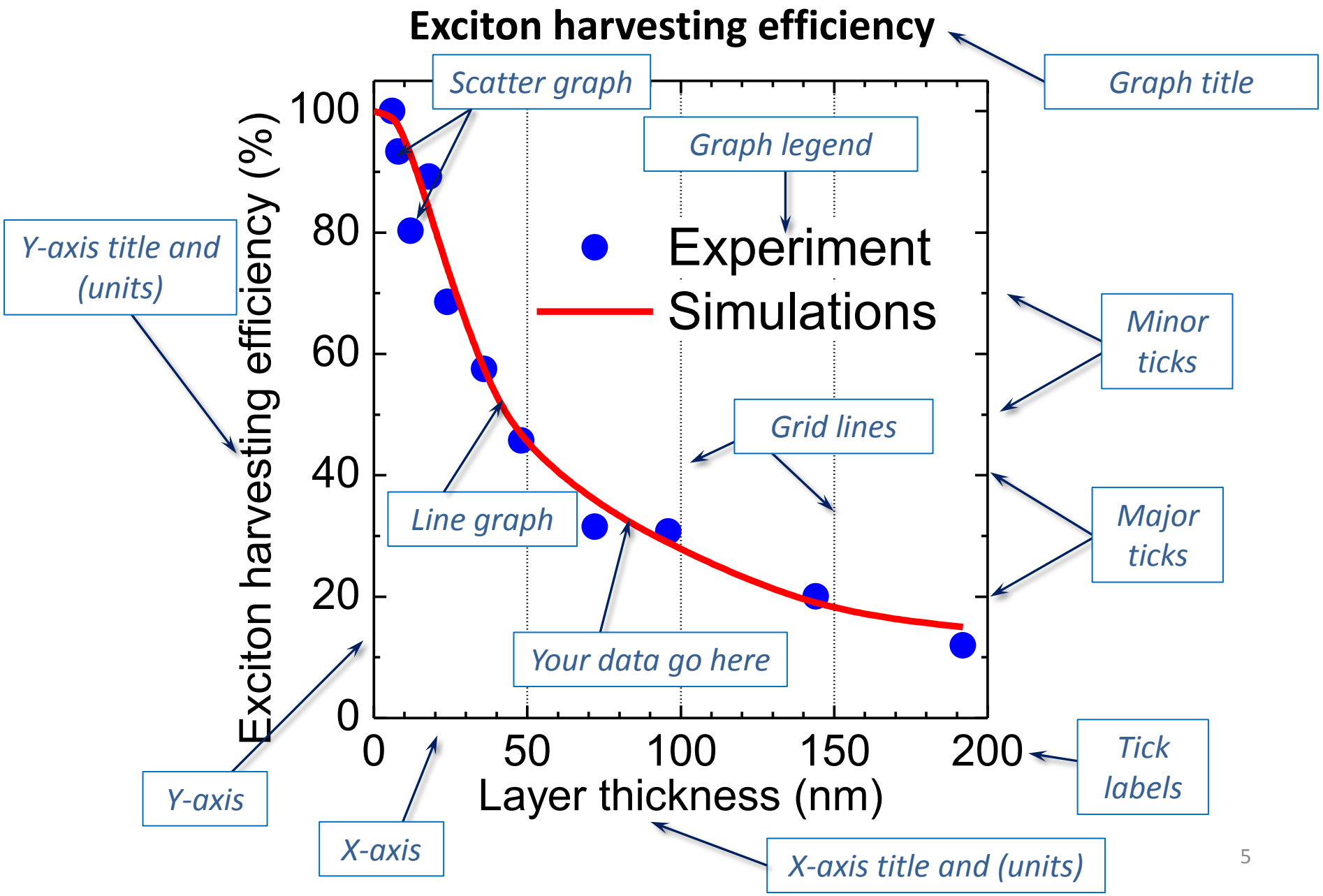
Exciton harvesting efficiency

Sample thickness, nm	Harvesting efficiency, %	
	Experiment	Theory
0	1	1
6	0.99098	0.99098
8	0.97663	0.97663
12	0.93135	0.93117
18	0.83411	0.83811
24	0.73483	0.73911
36	0.55773	0.56456
48	0.43902	0.45275
72	0.32805	0.35481
96	0.28499	0.28553
144	0.14737	0.17687
192	0.12993	0.14985

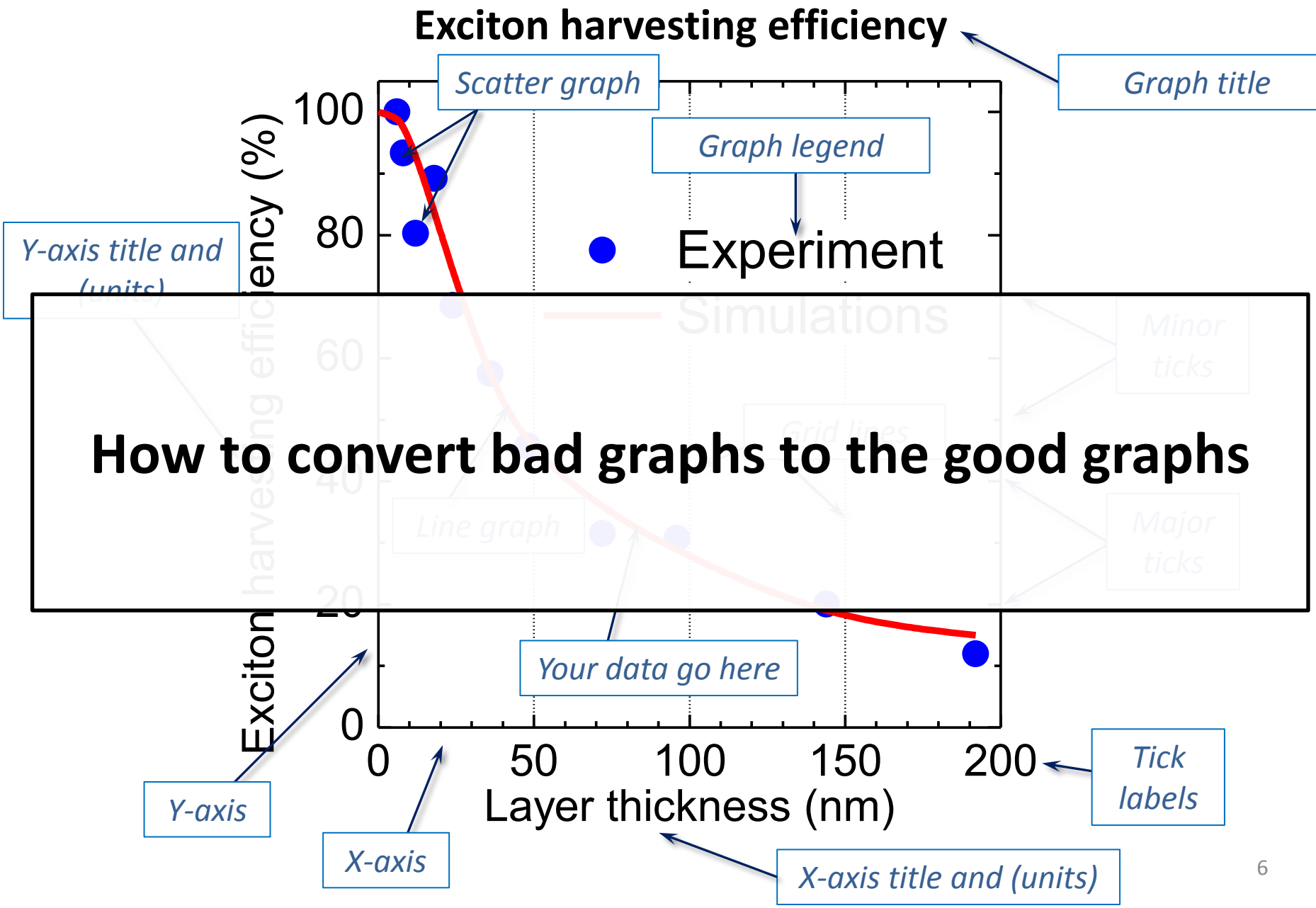
Graphical Representation of Data



Graph Anatomy

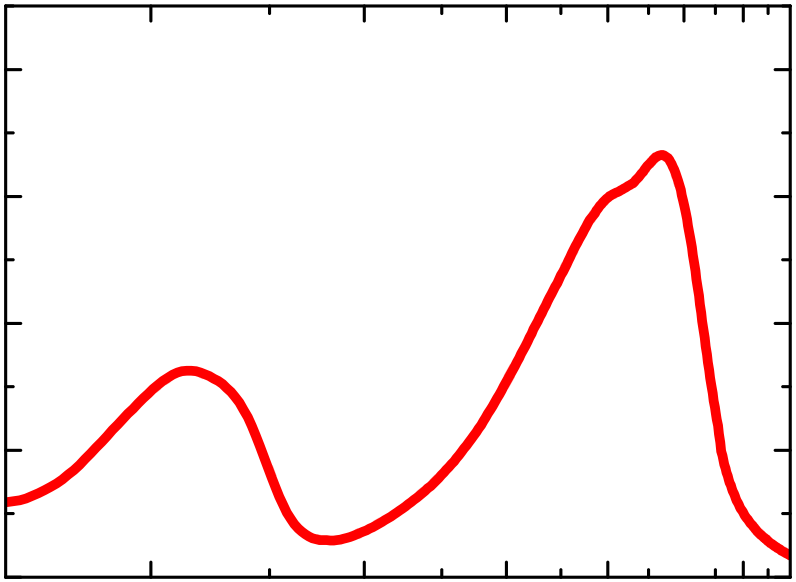


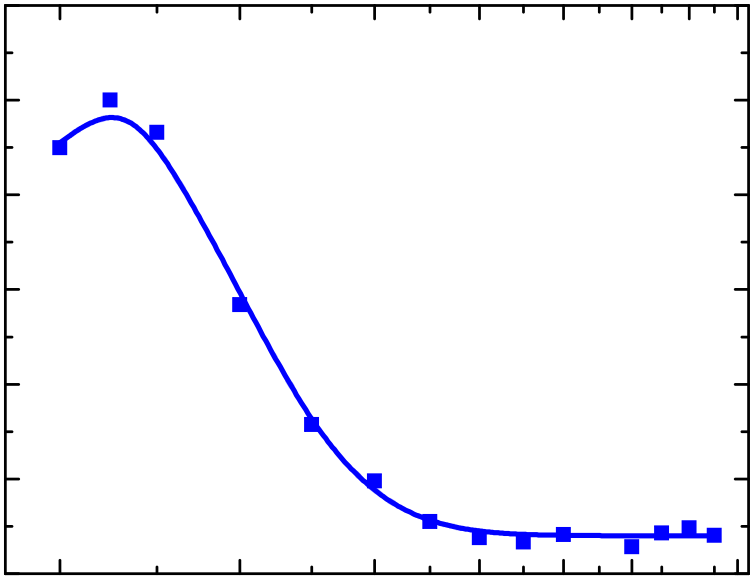
Graph Anatomy



How to convert bad graphs to the good graphs

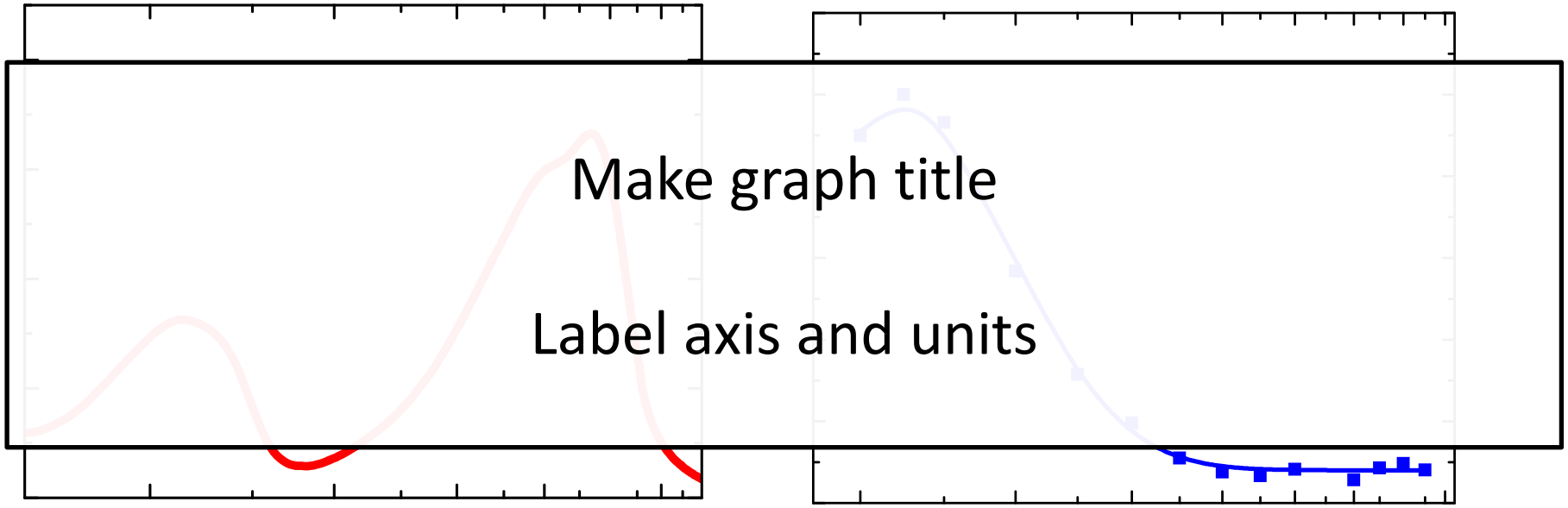
Labeling the graphs





Initial version

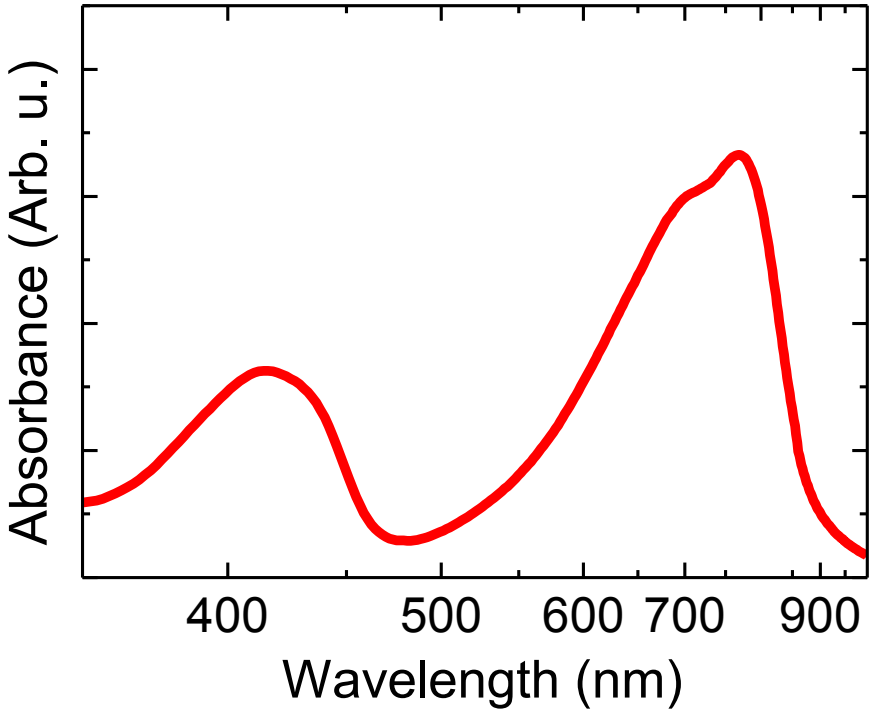
Labeling the graphs



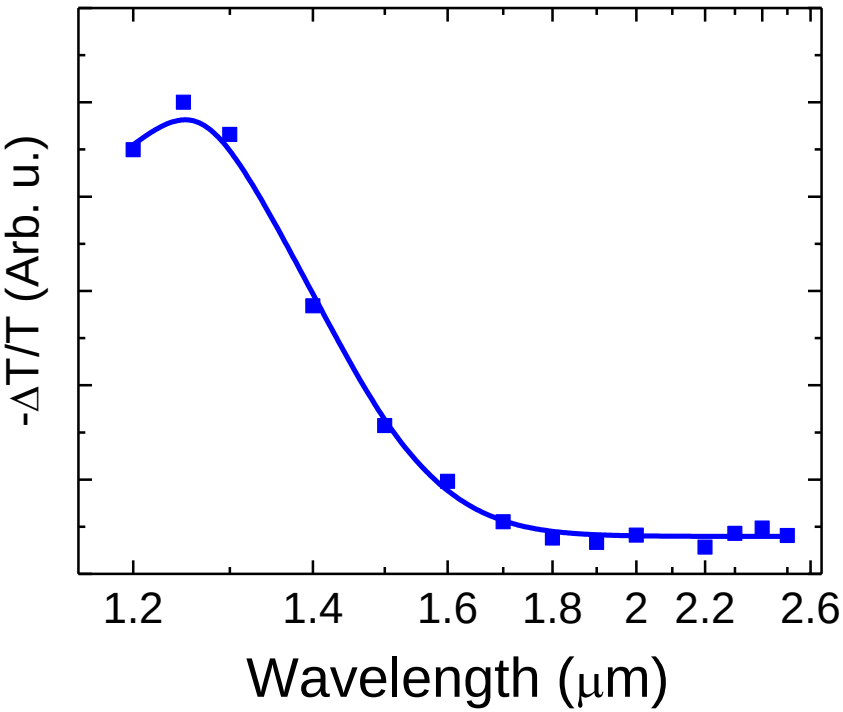
Initial version

Labeling the graphs

Linear absorption spectrum

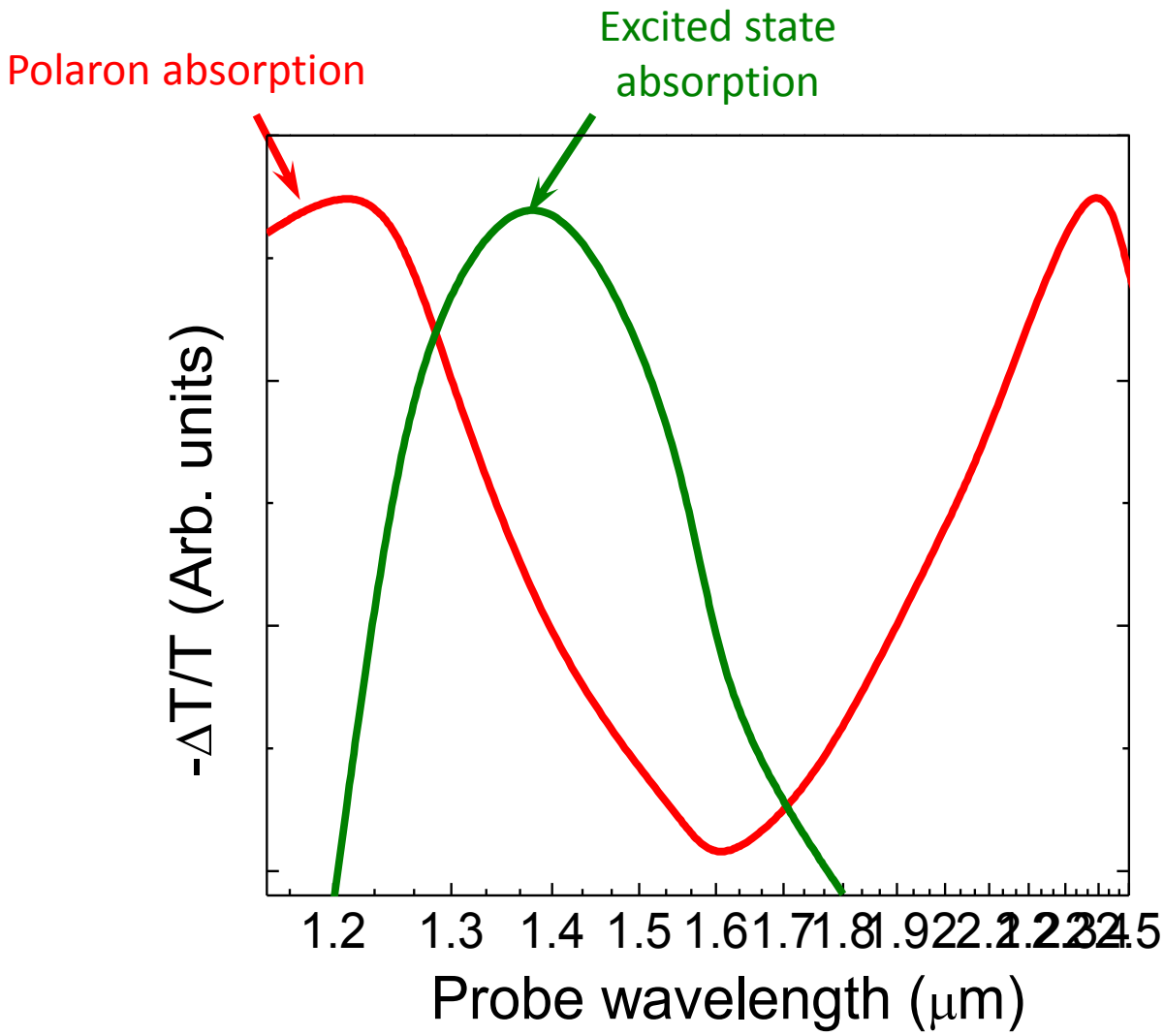


Polaron absorption spectrum



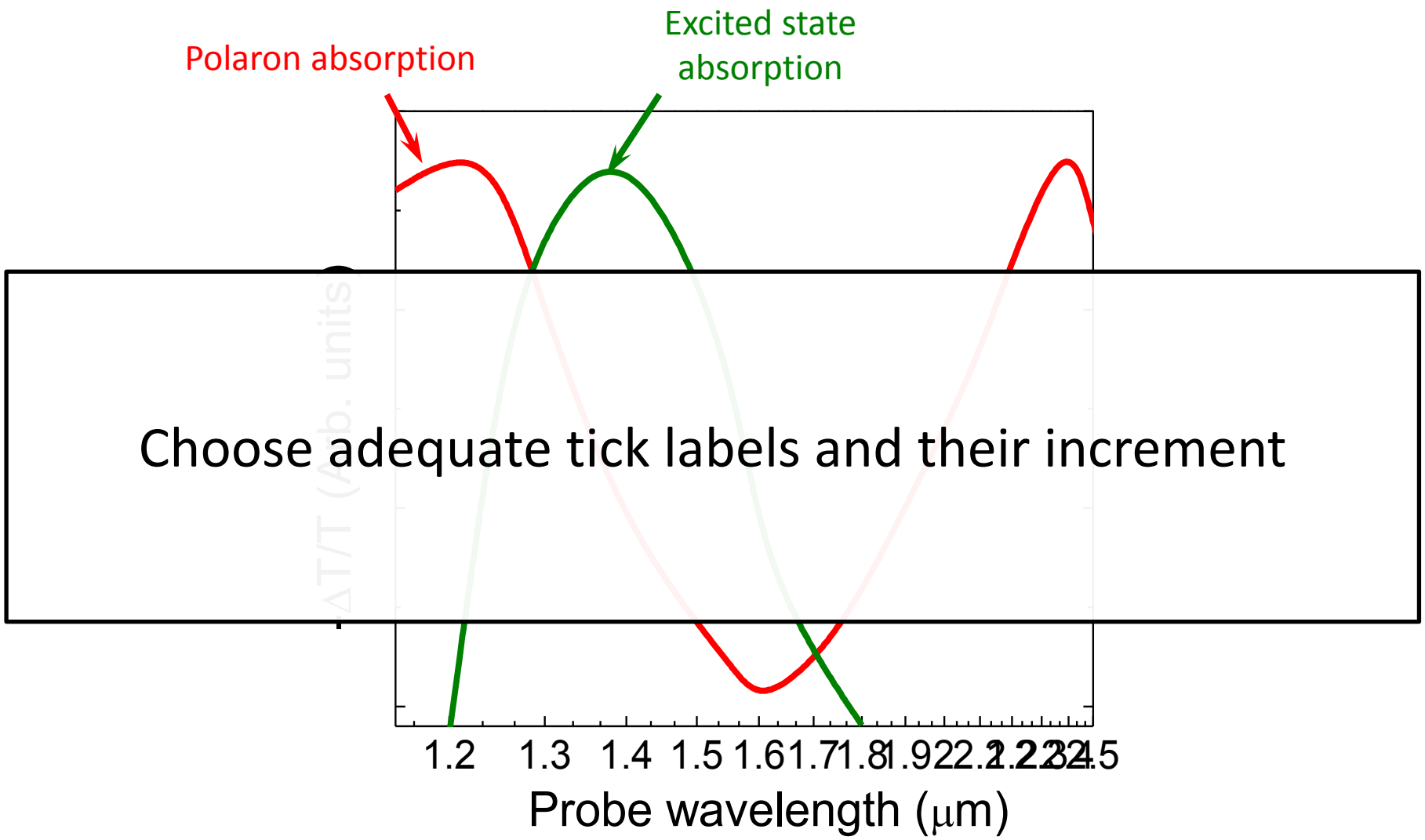
Corrected version

Choosing the labels



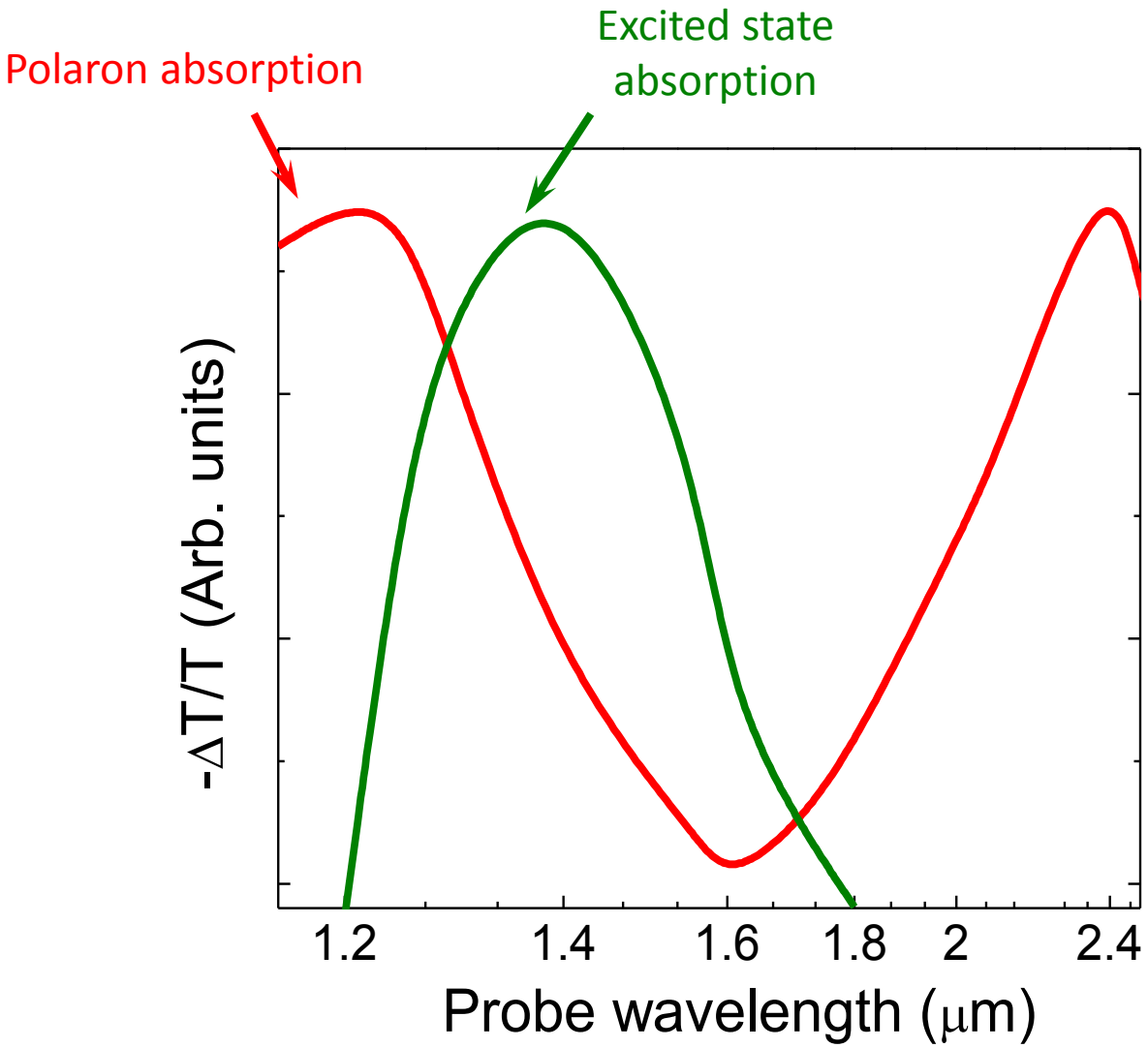
Initial version

Choosing the labels



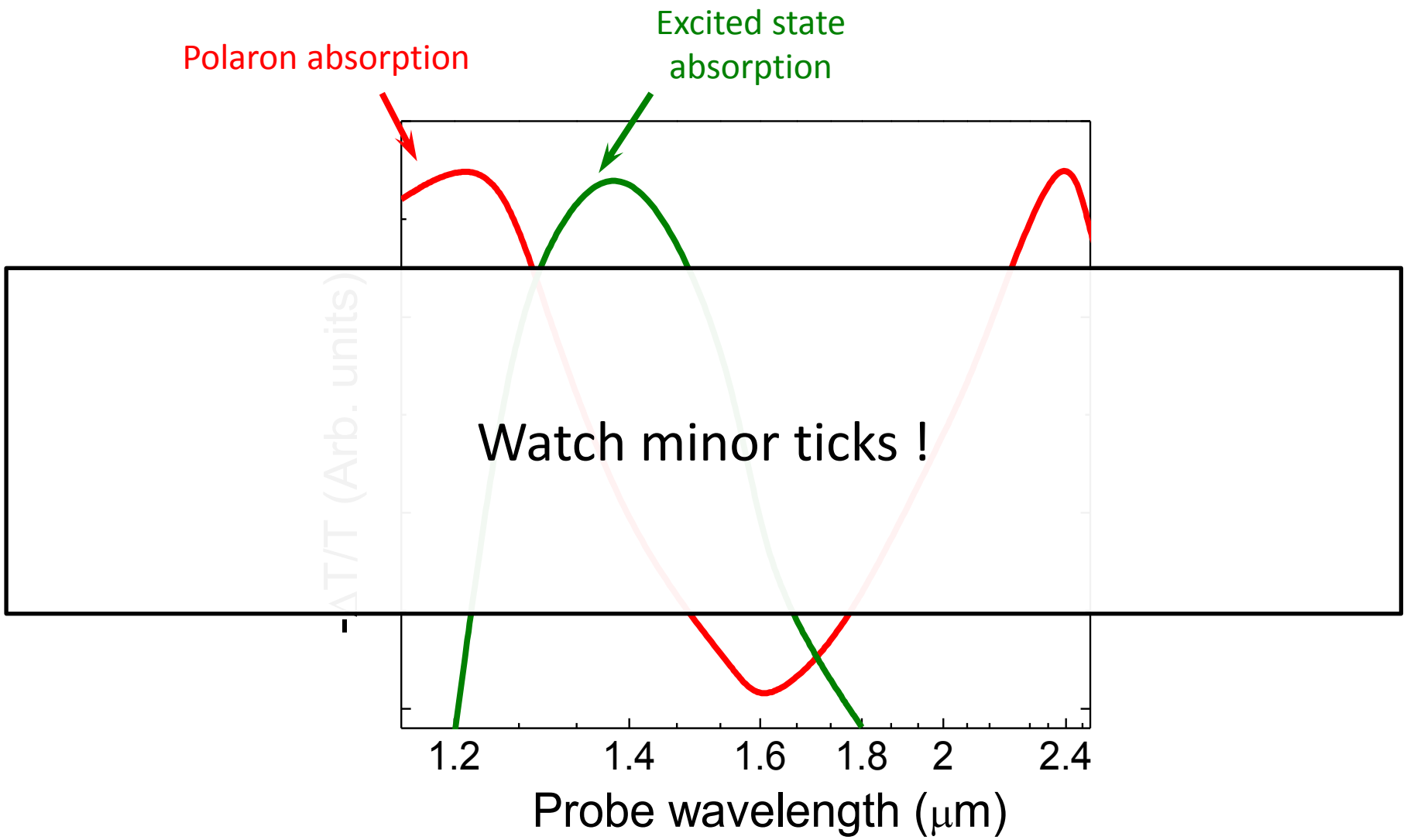
Initial version

Choosing the labels



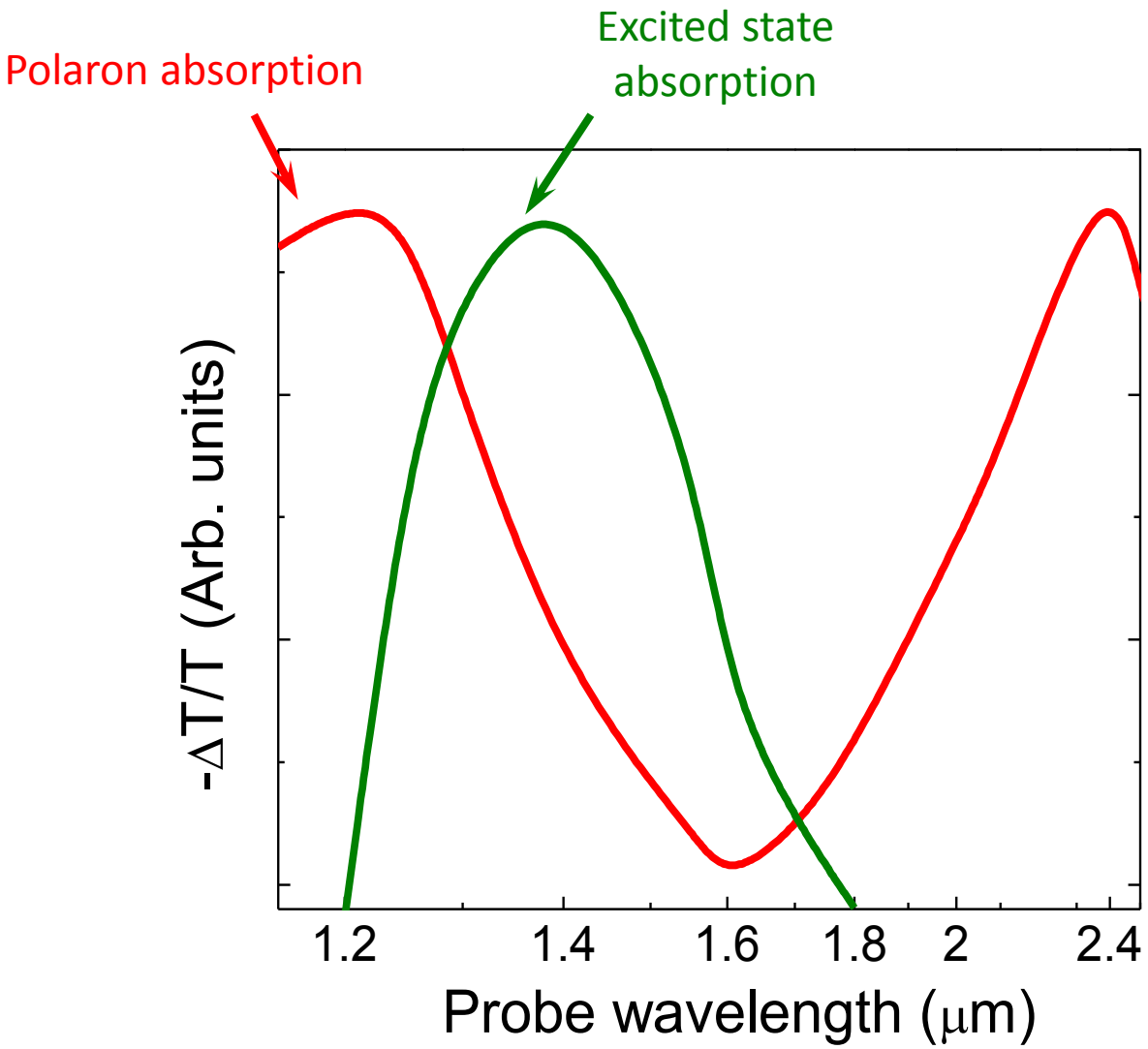
Corrected (?) version

Choosing the labels



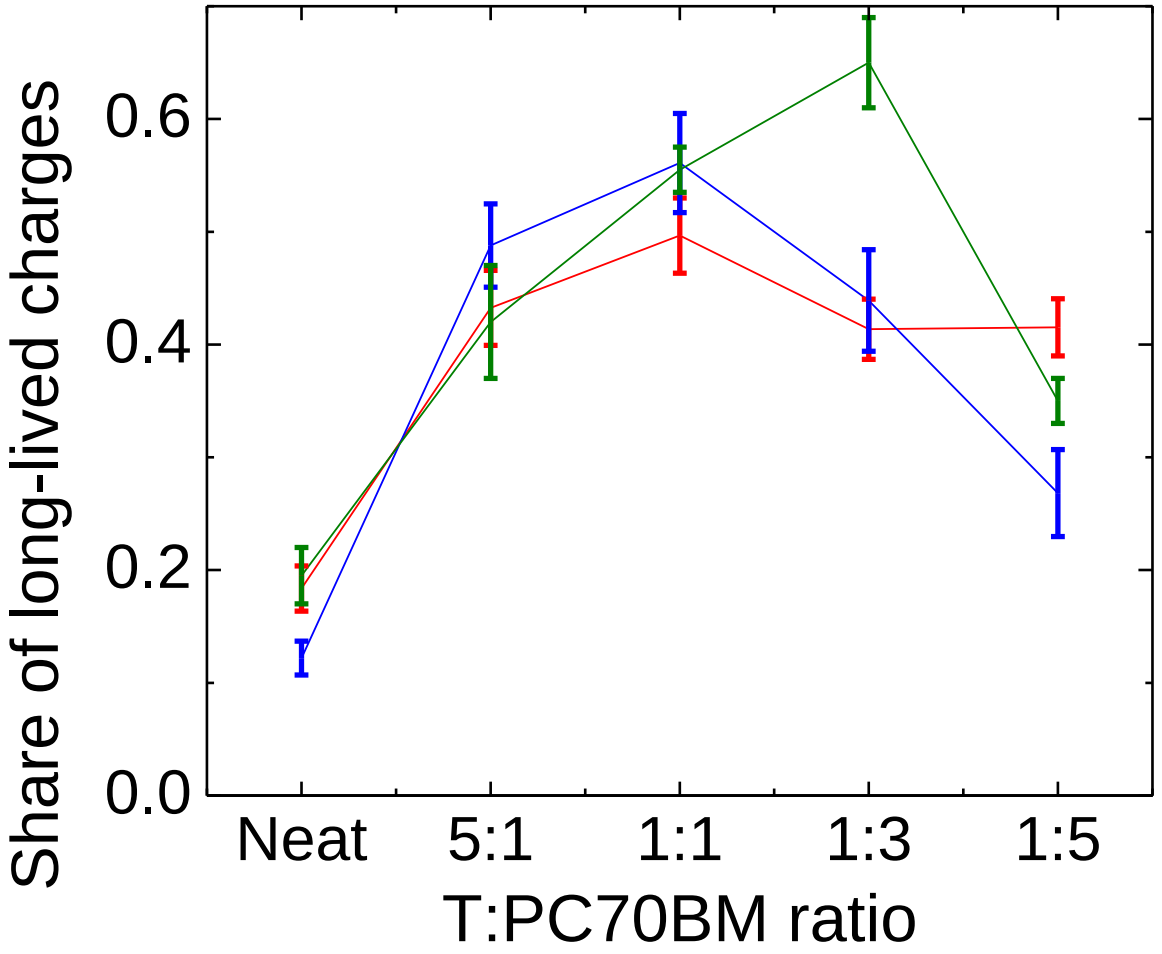
Corrected (?) version

Choosing the labels



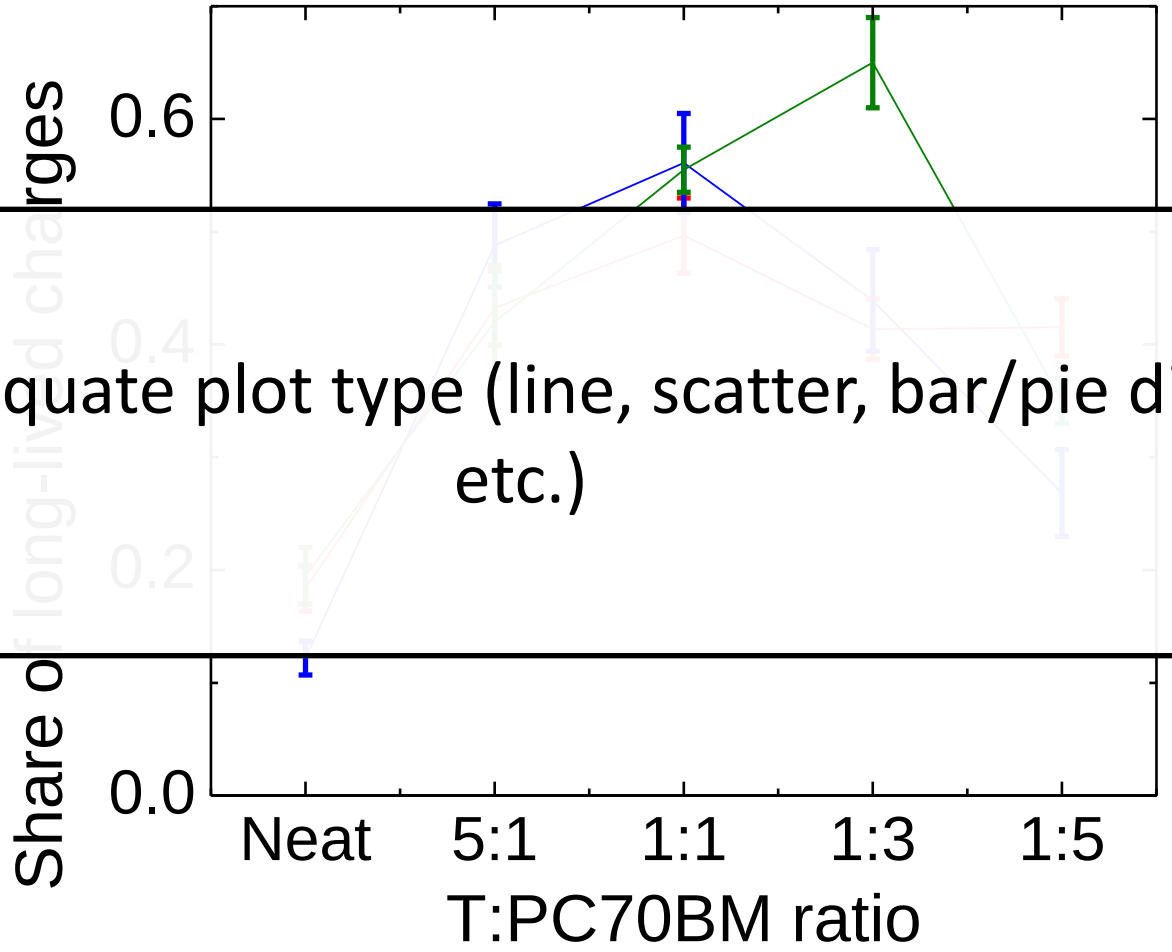
Corrected version

Choosing the plot type



Initial version

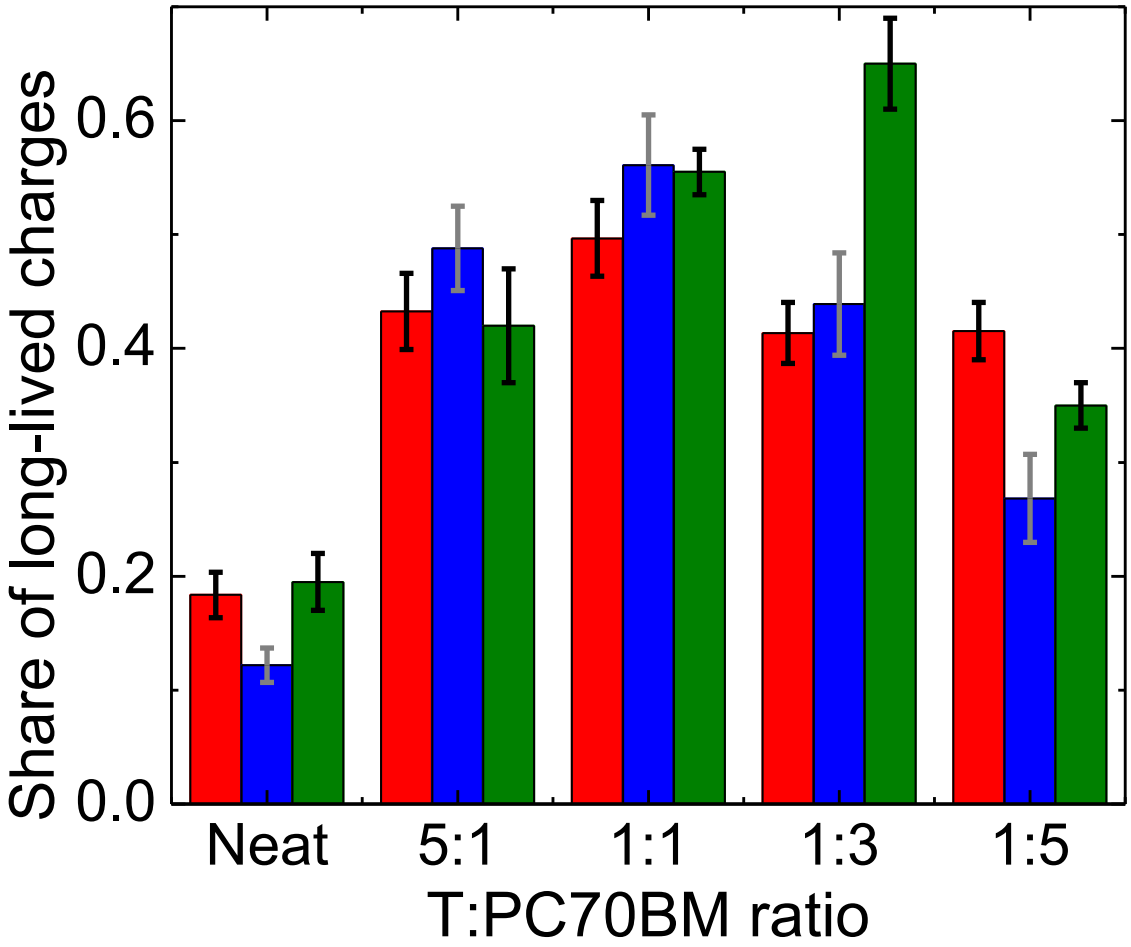
Choosing the plot type



Choose adequate plot type (line, scatter, bar/pie diagram, etc.)

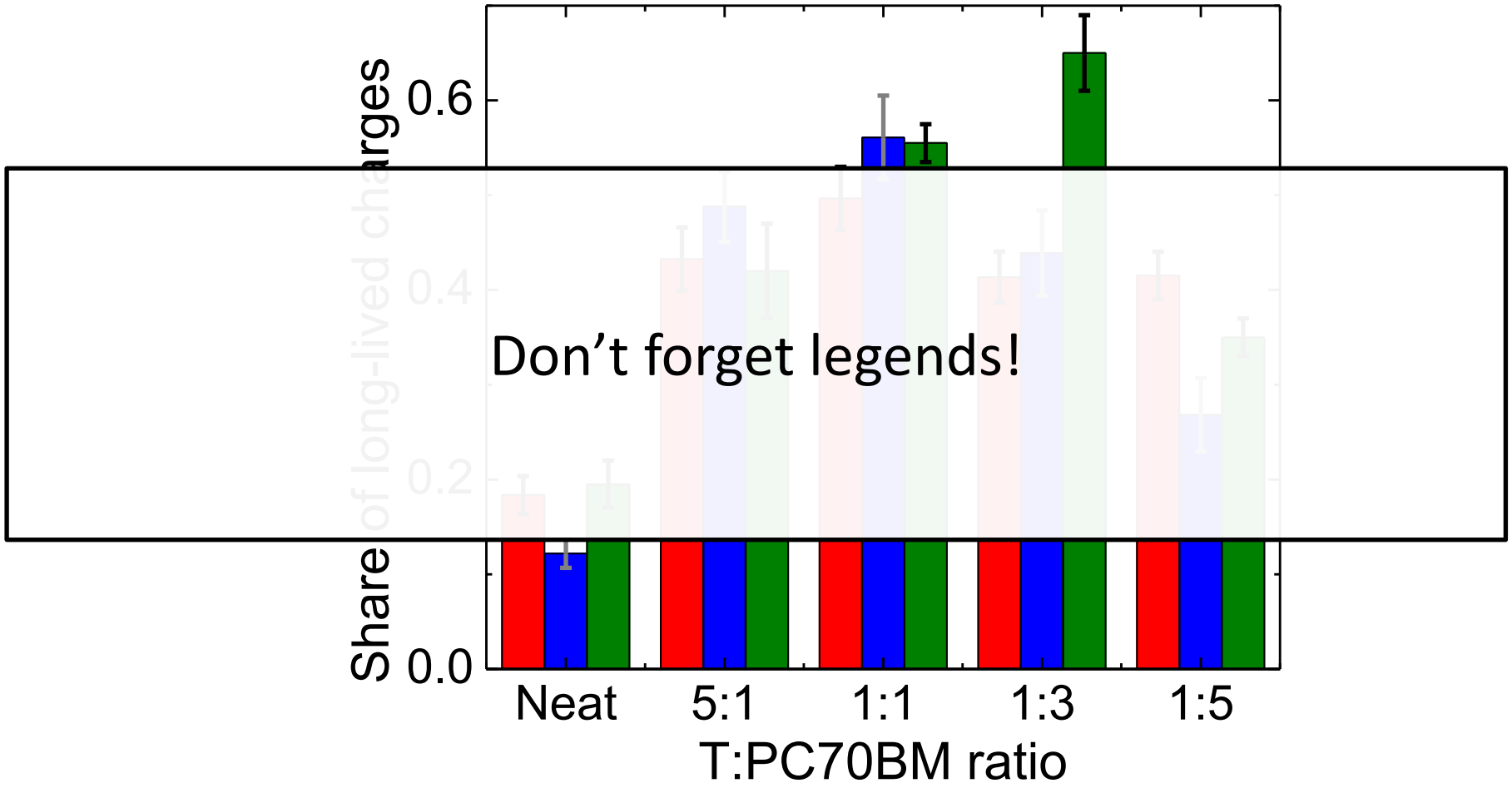
Initial version

Adding legends



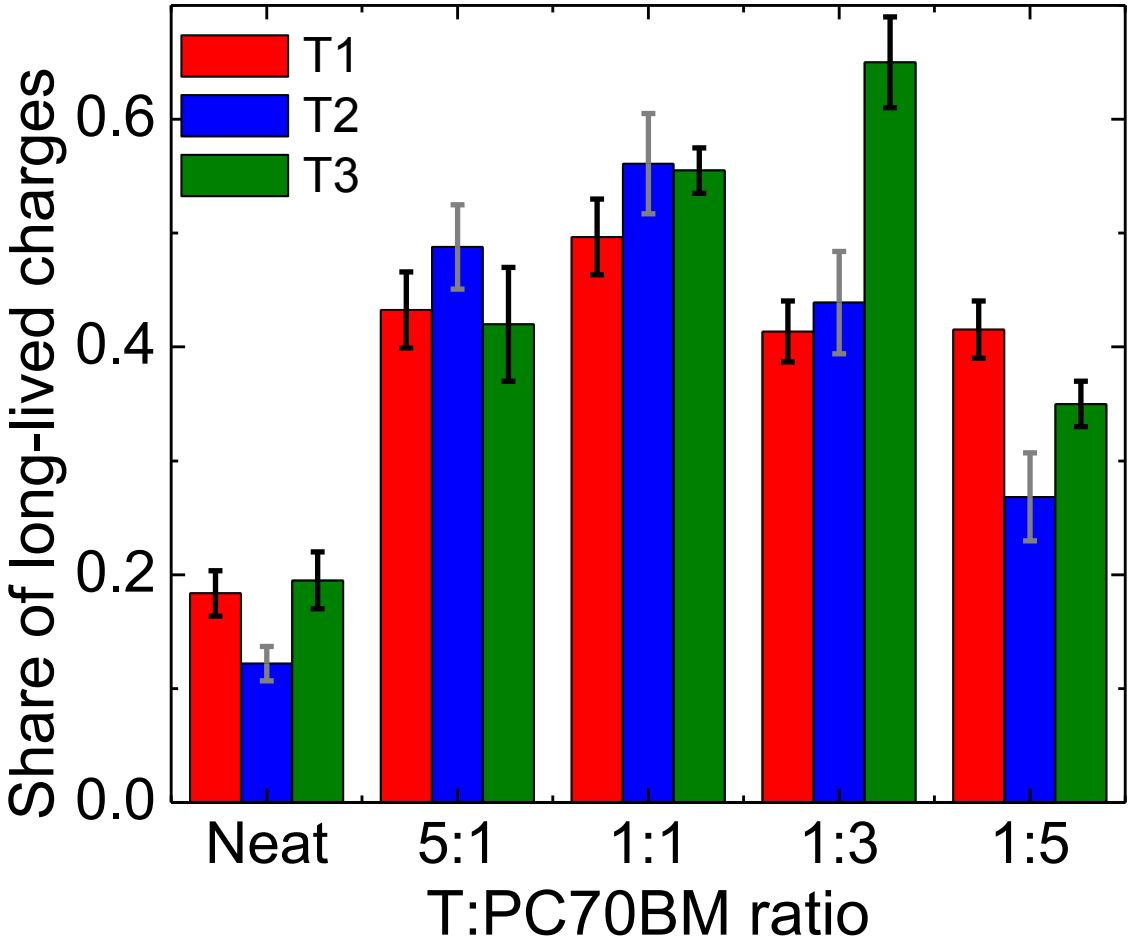
Corrected (?) version

Adding legends



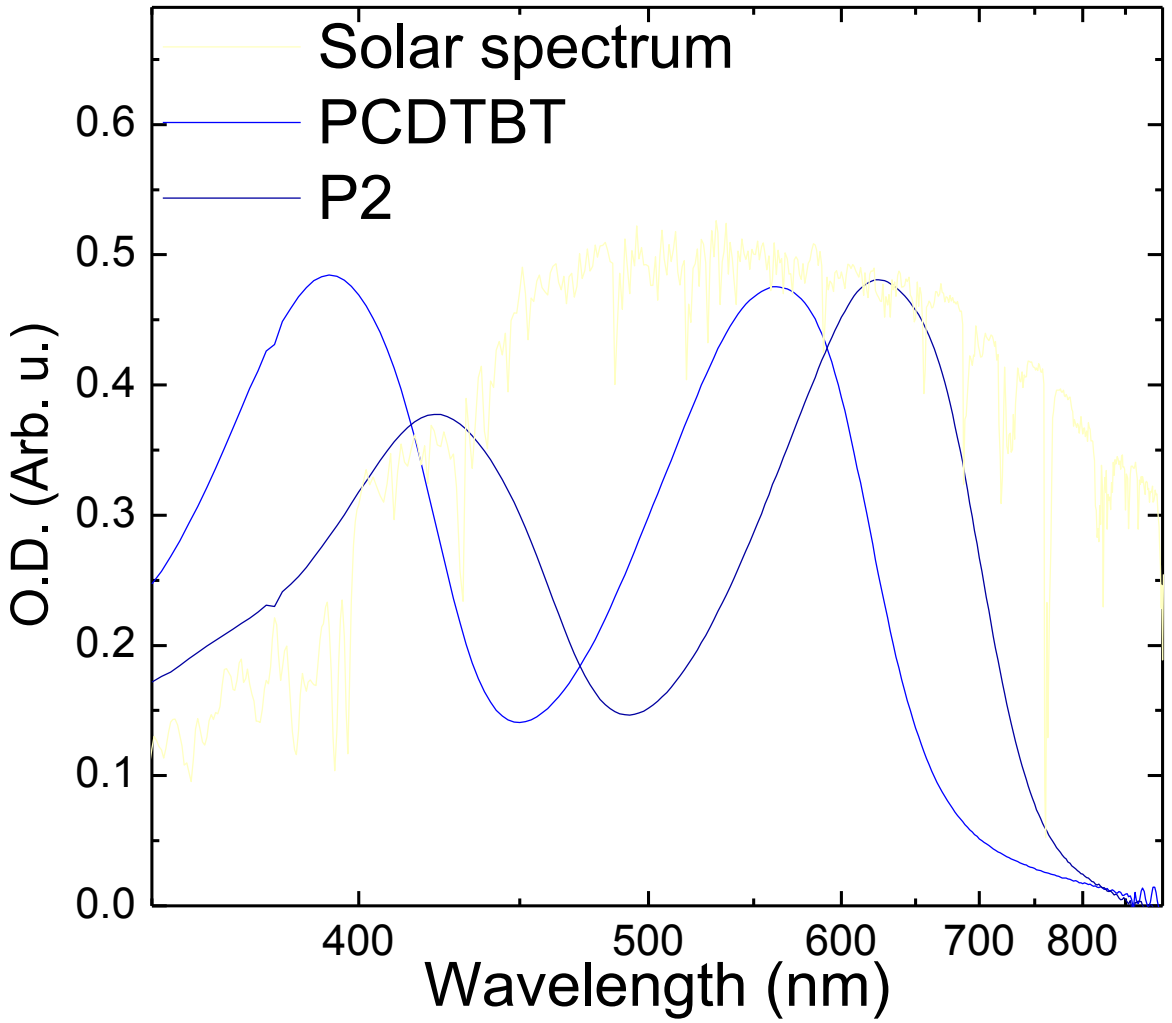
Corrected (?) version

Adding legends



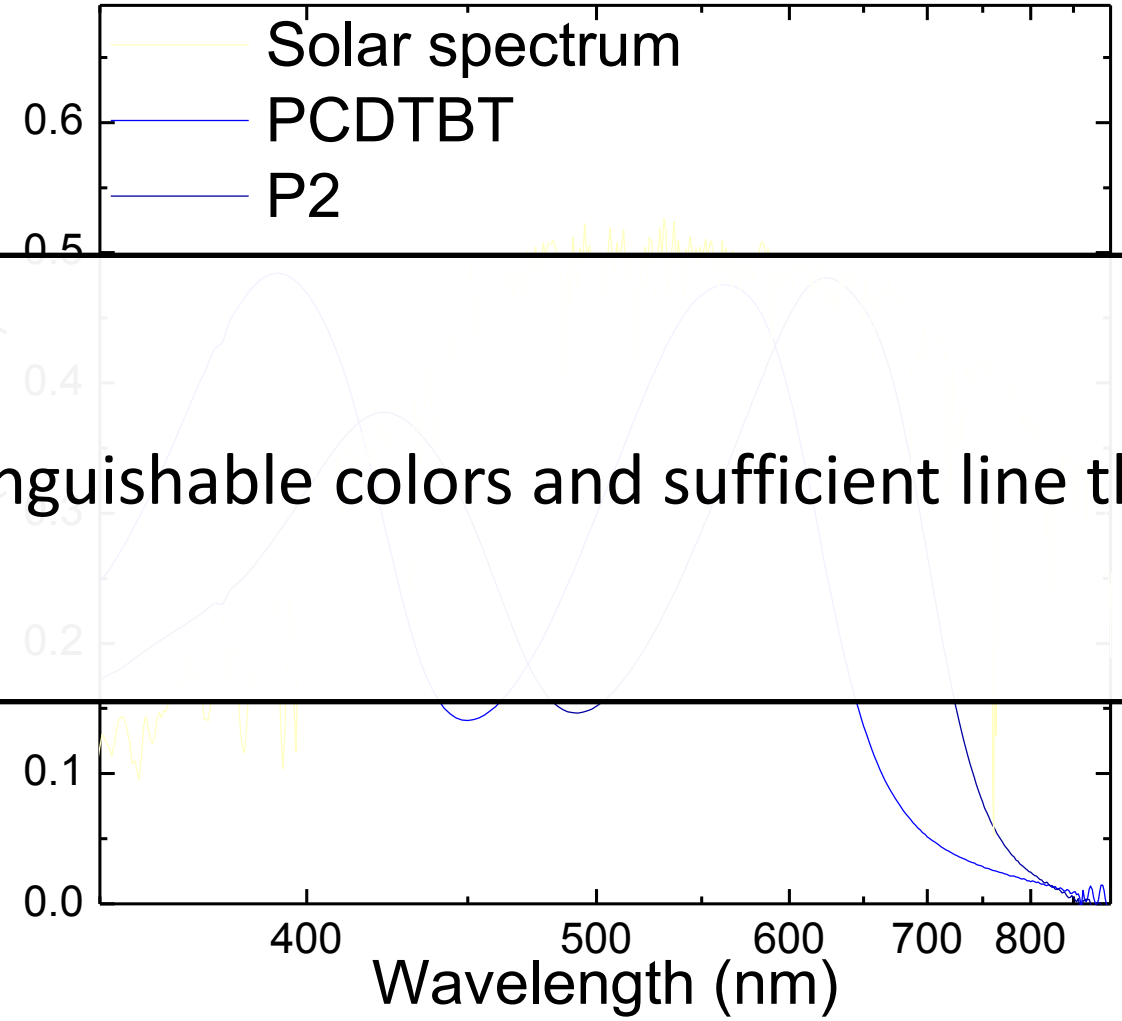
Corrected version

Choosing the colors



Initial version

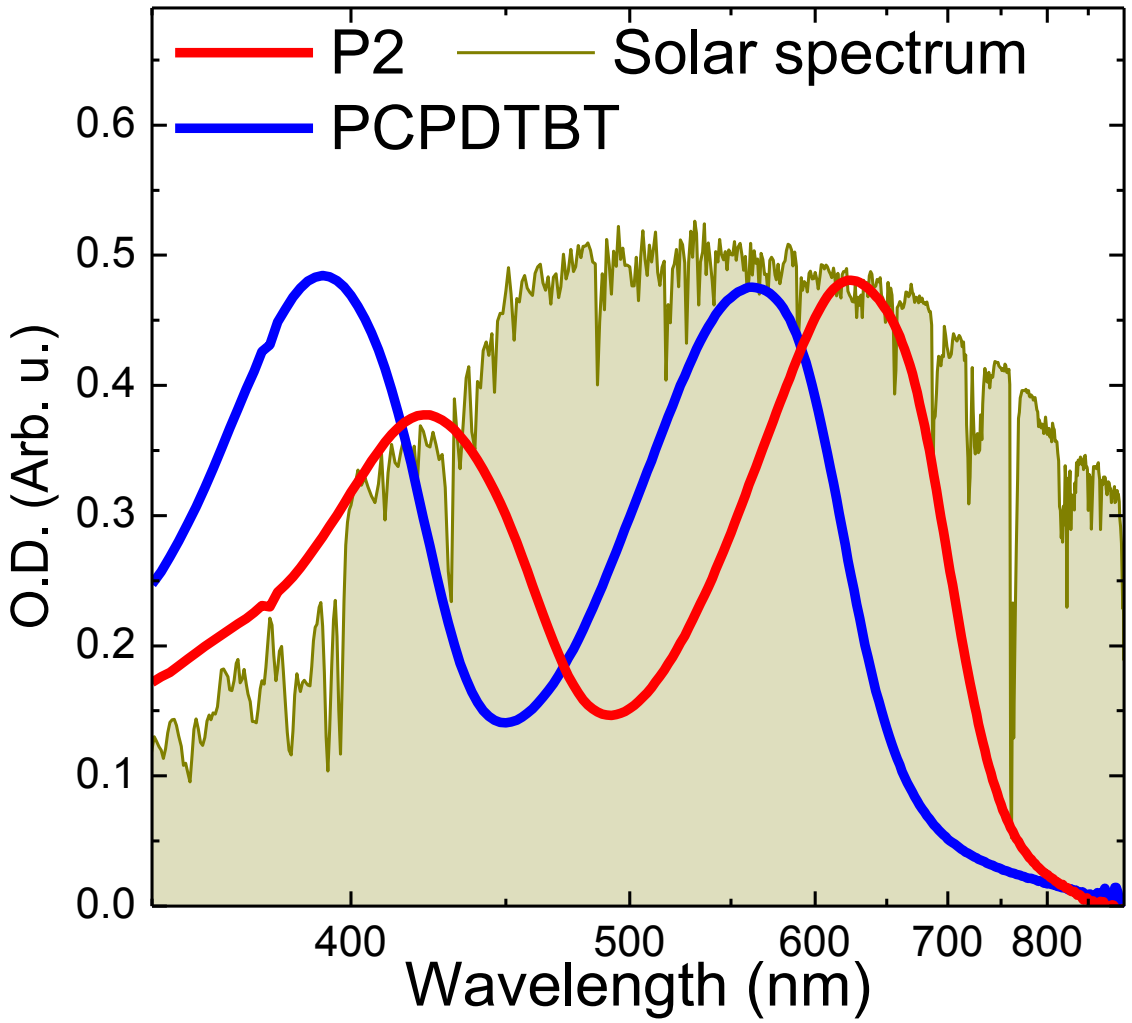
Choosing the colors



Choose distinguishable colors and sufficient line thickness

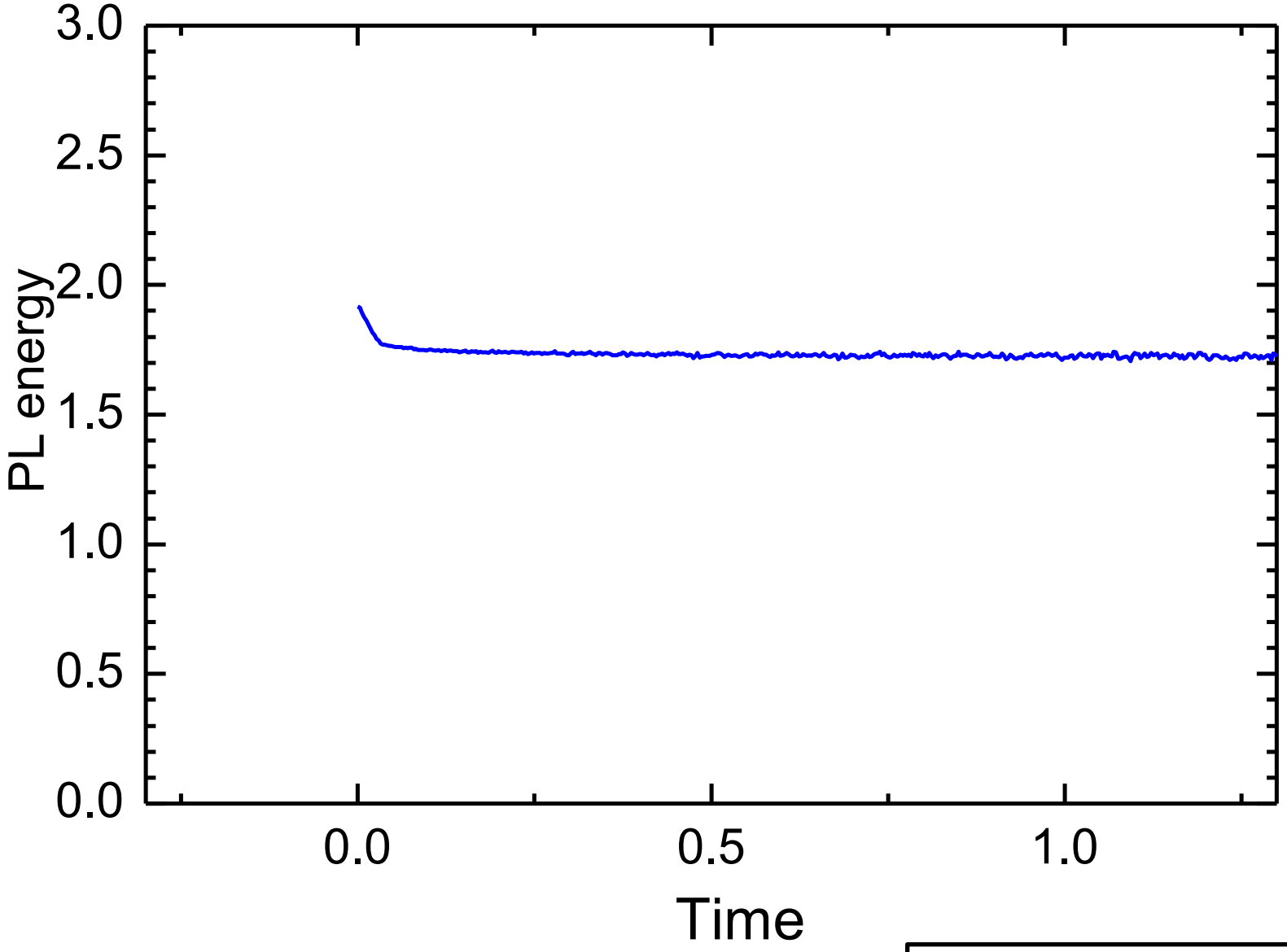
Initial version

Choosing the colors



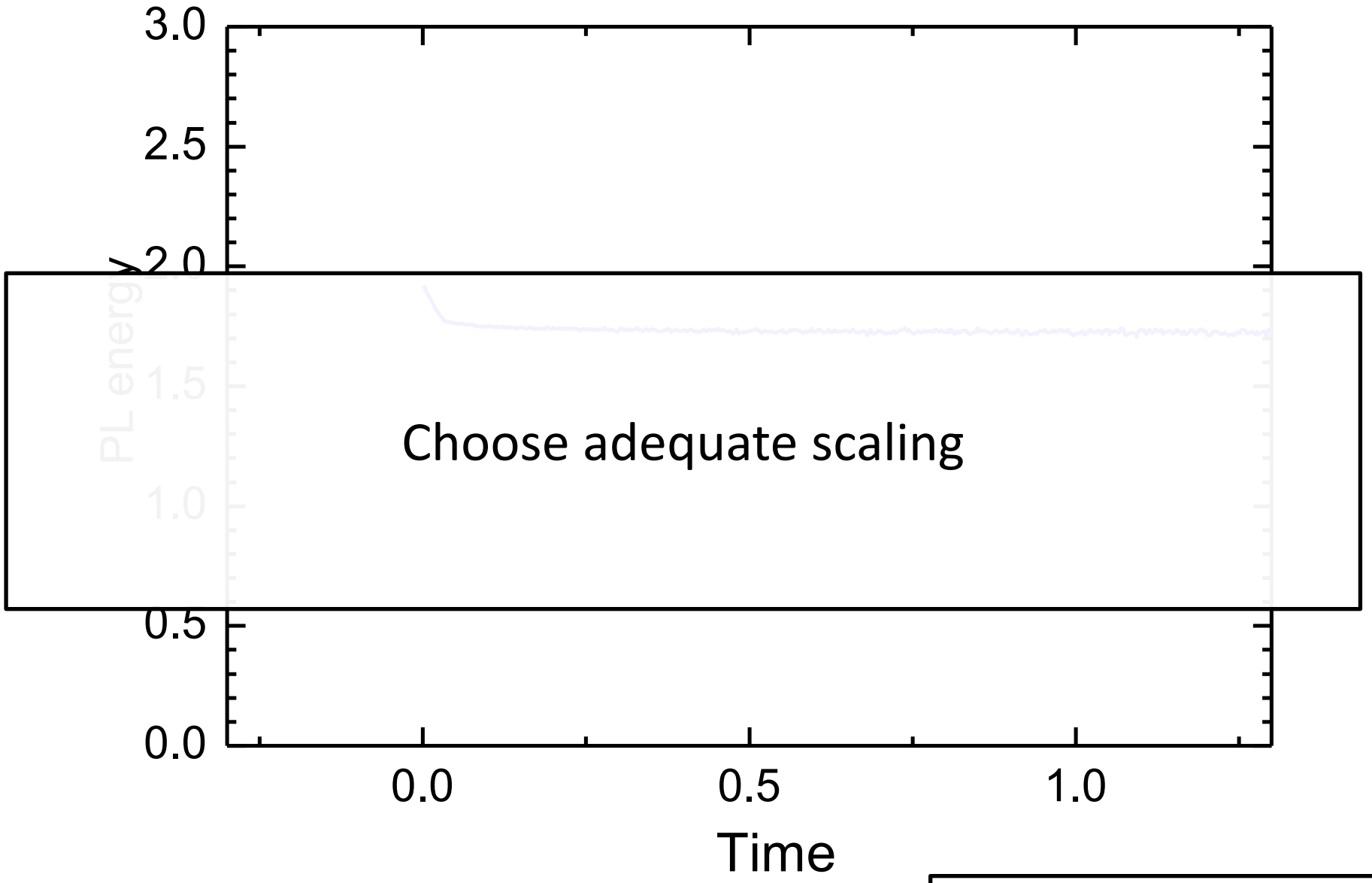
Corrected version

Choosing the scaling



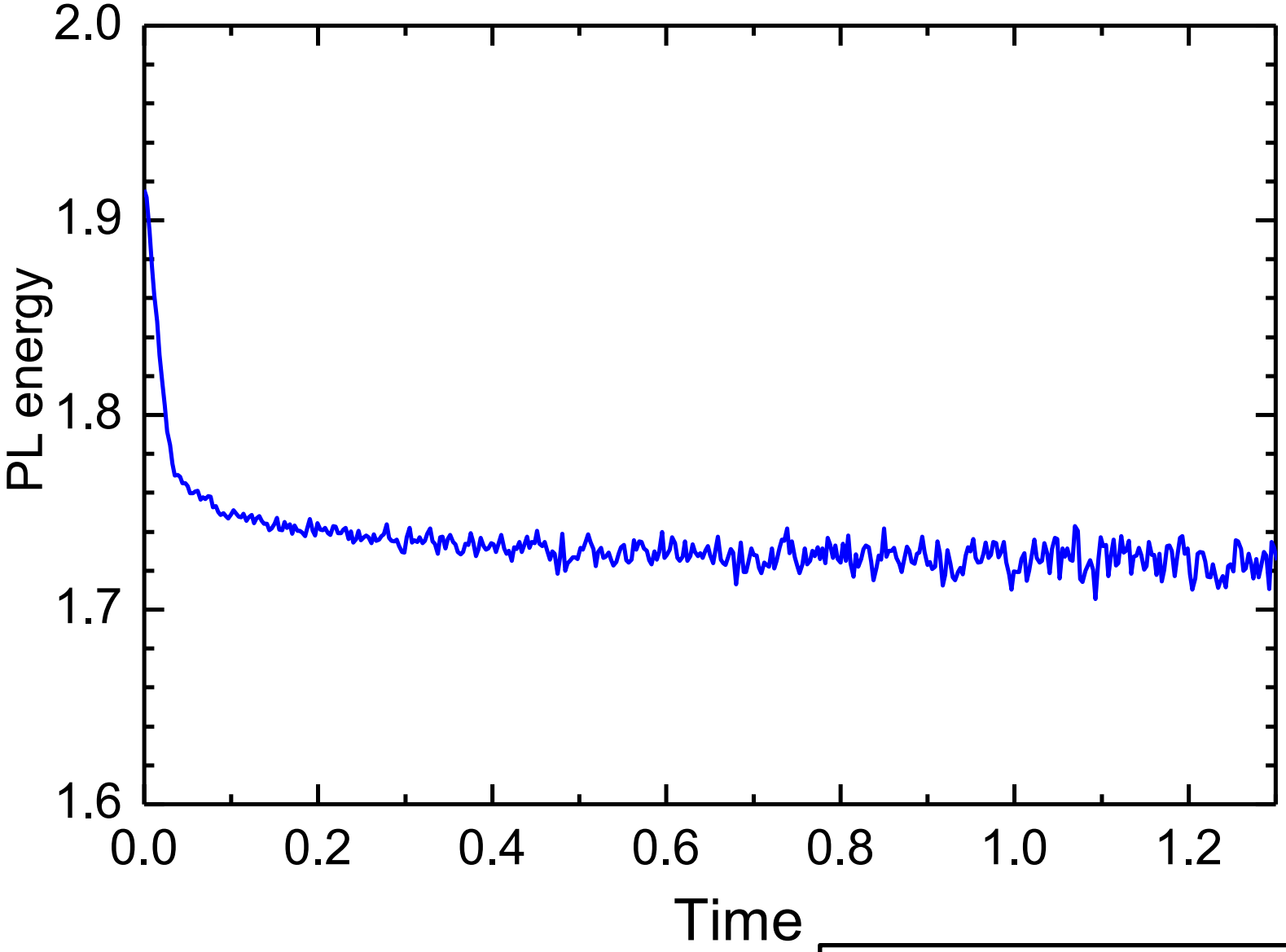
Initial version

Choosing the scaling



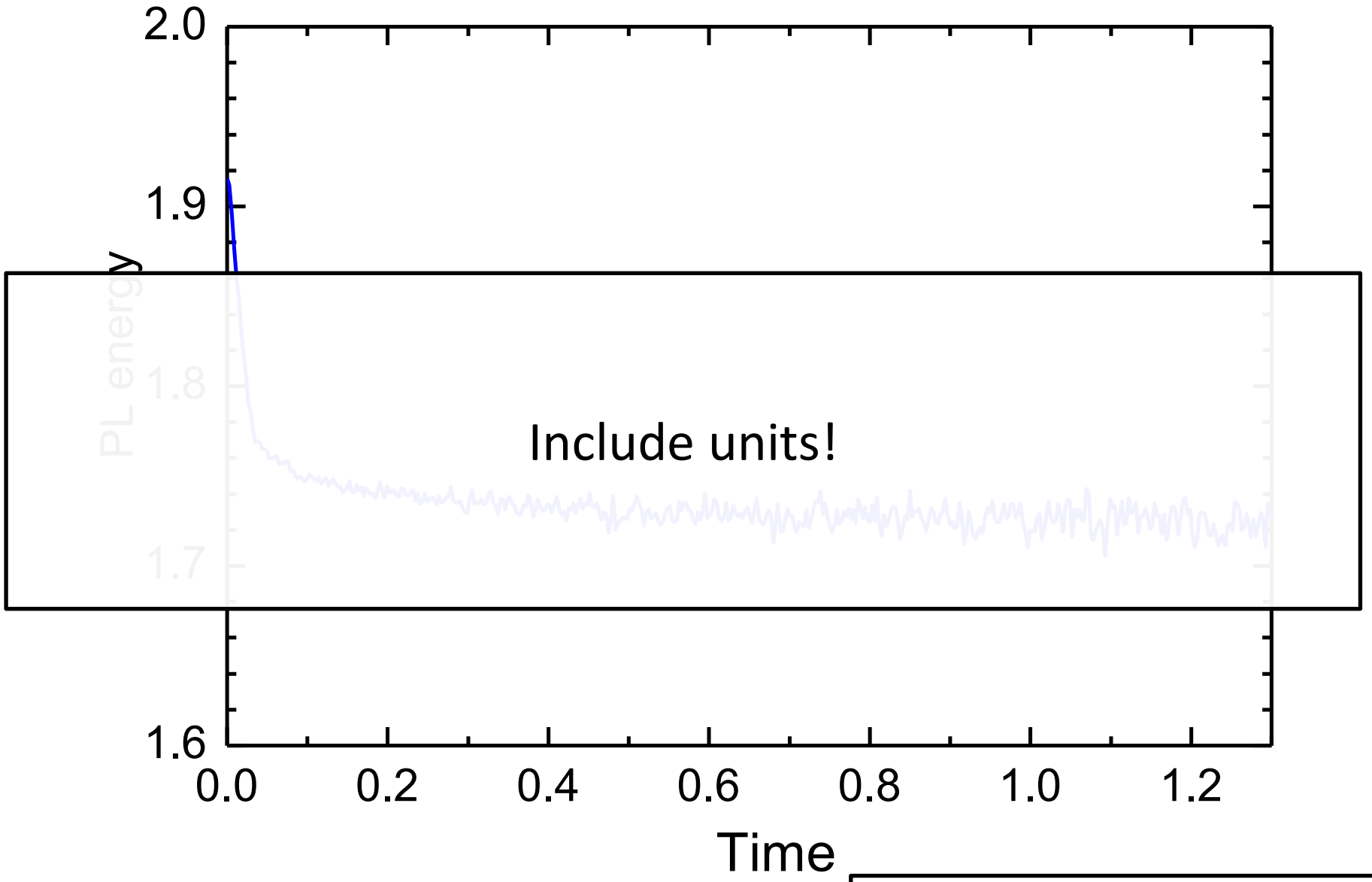
Initial version

Choosing the scaling



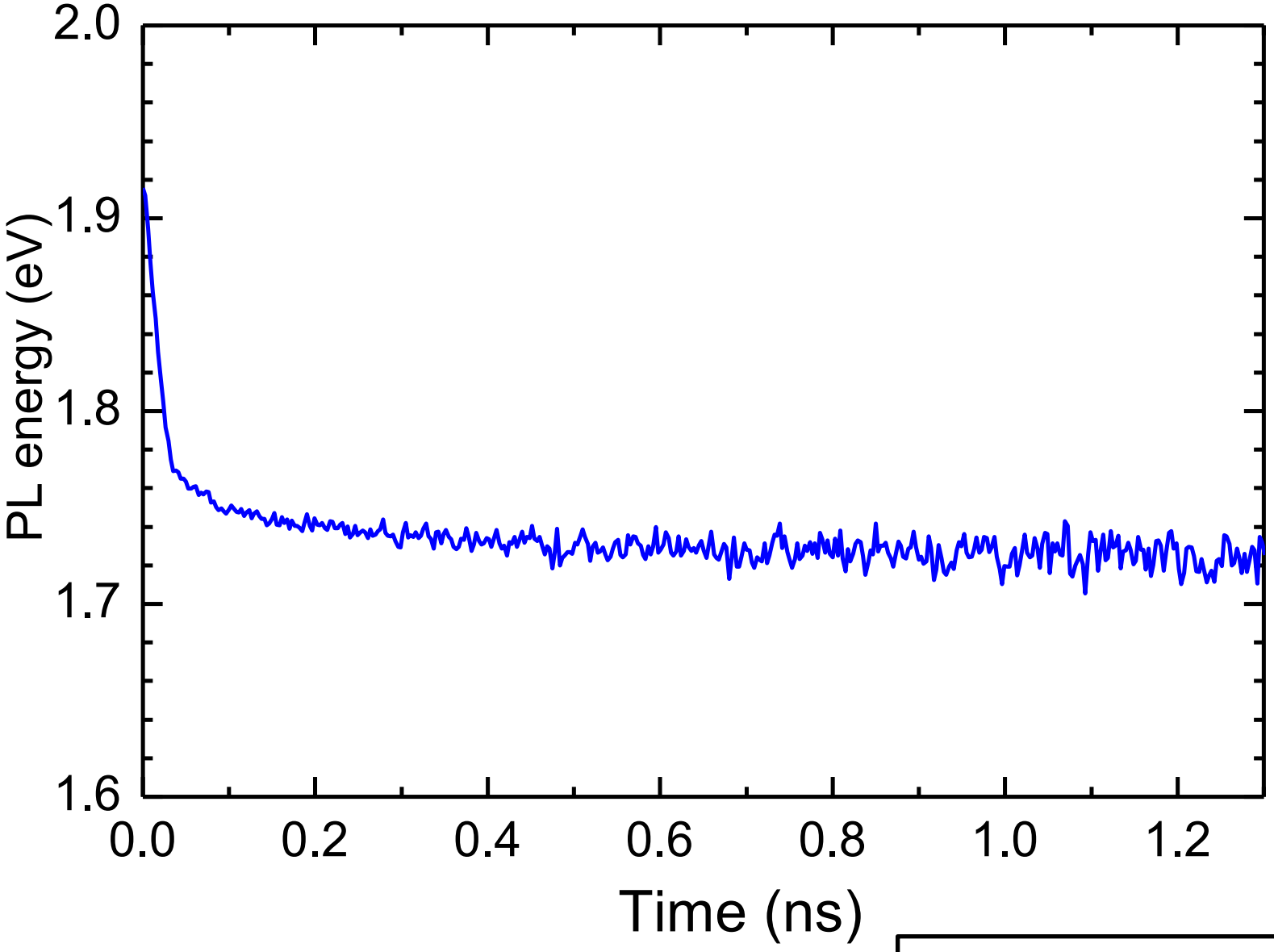
Corrected (?) version

Choosing the scaling



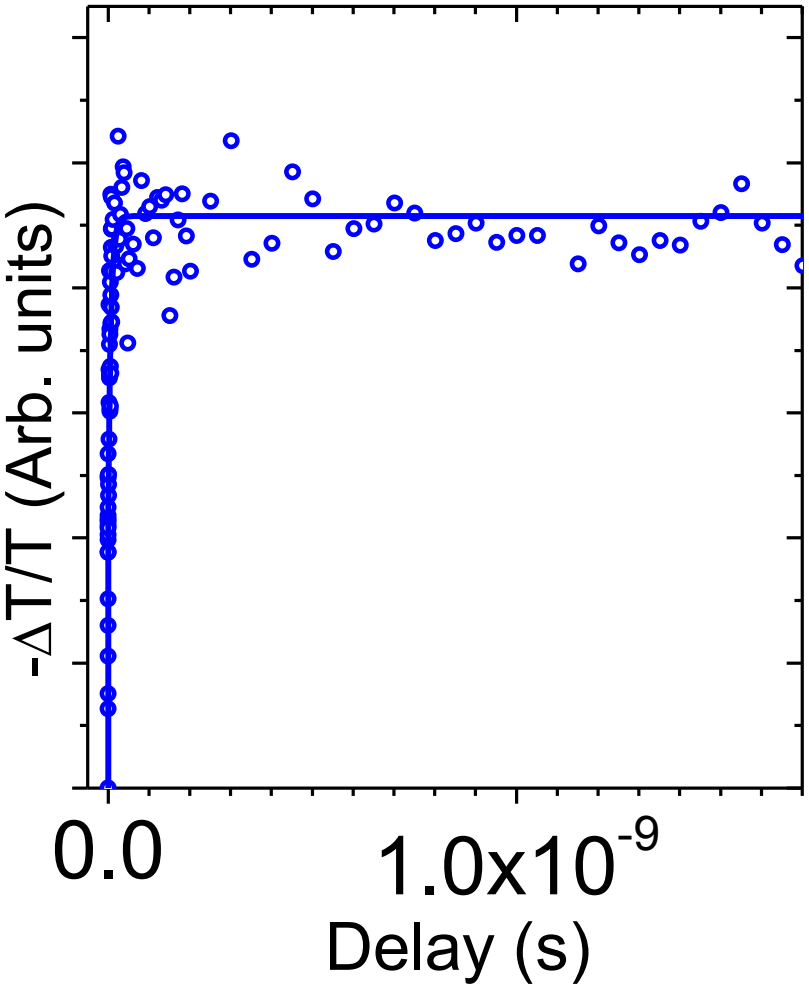
Corrected (?) version

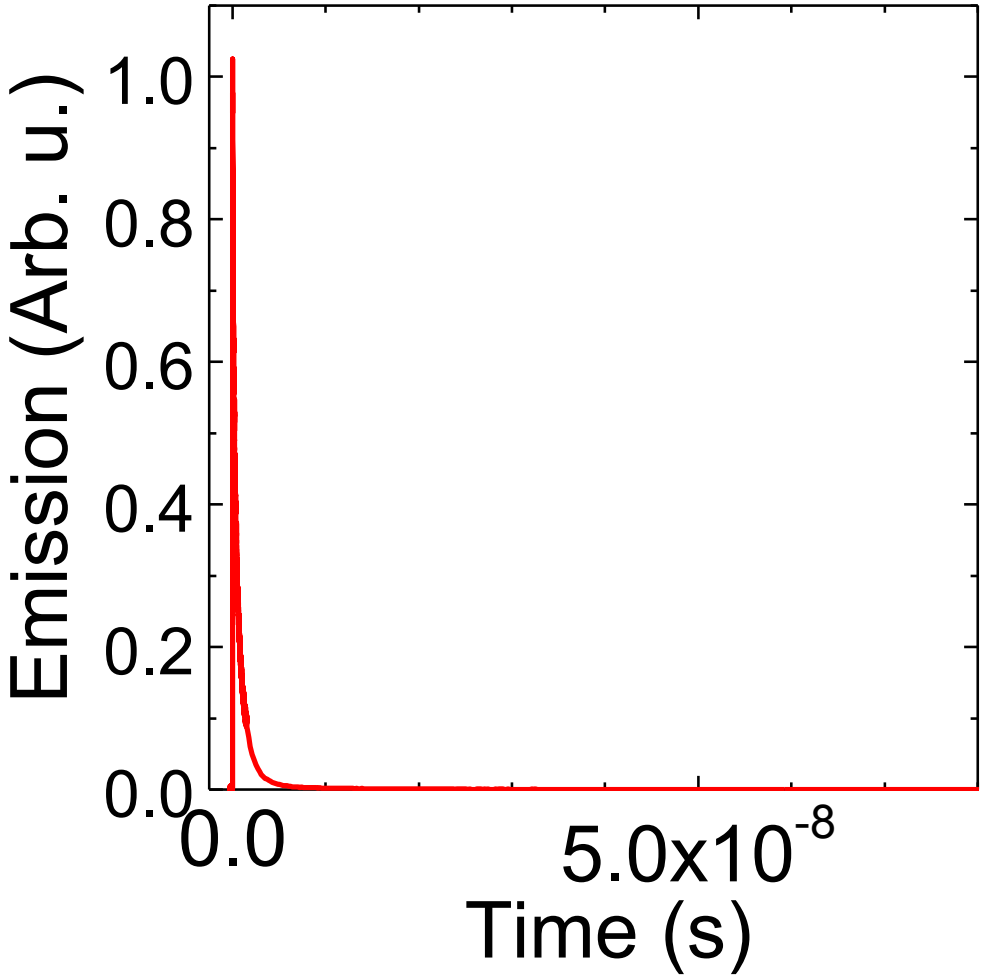
Choosing the scaling



Corrected version

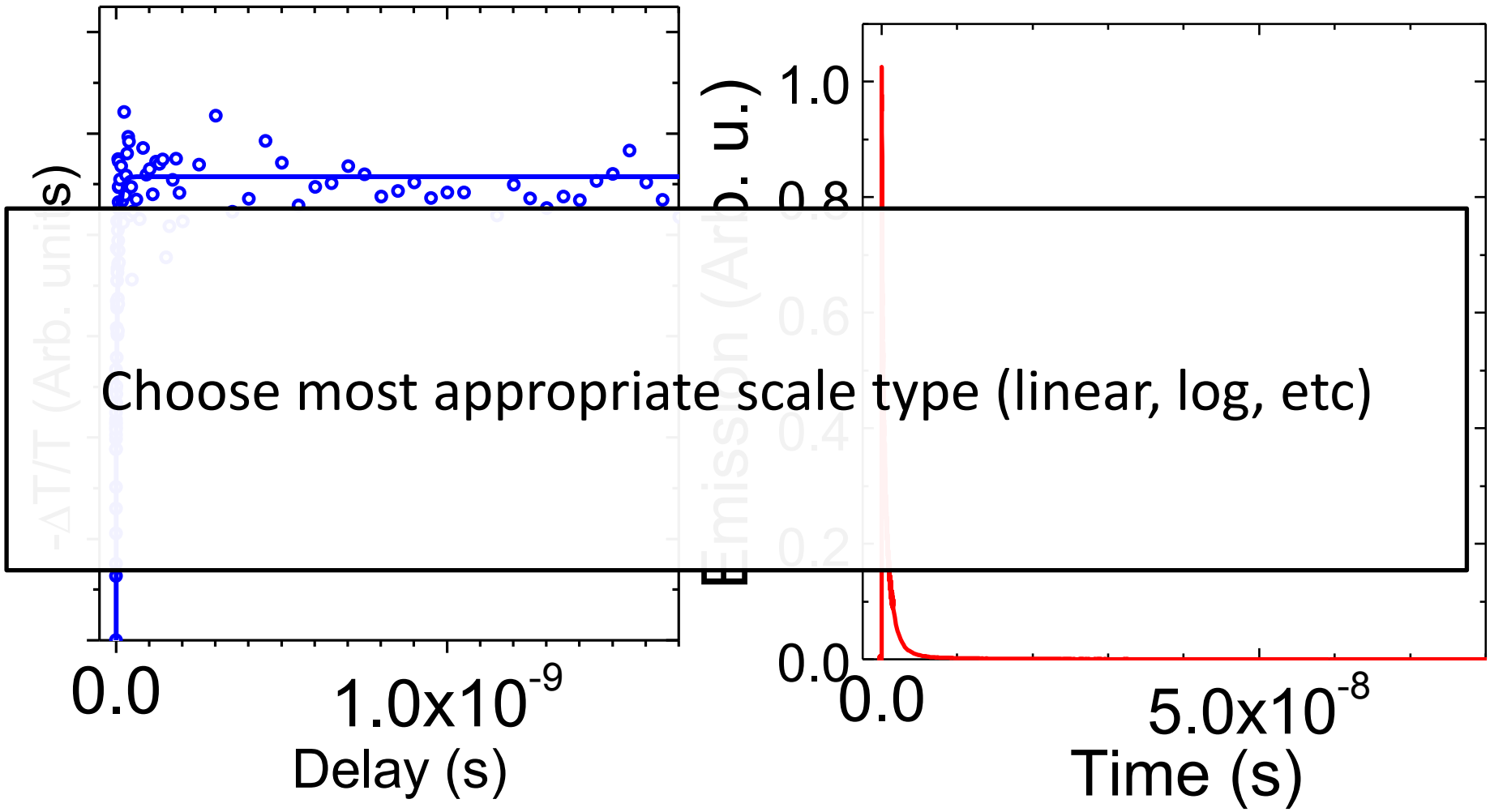
Choosing the axis type





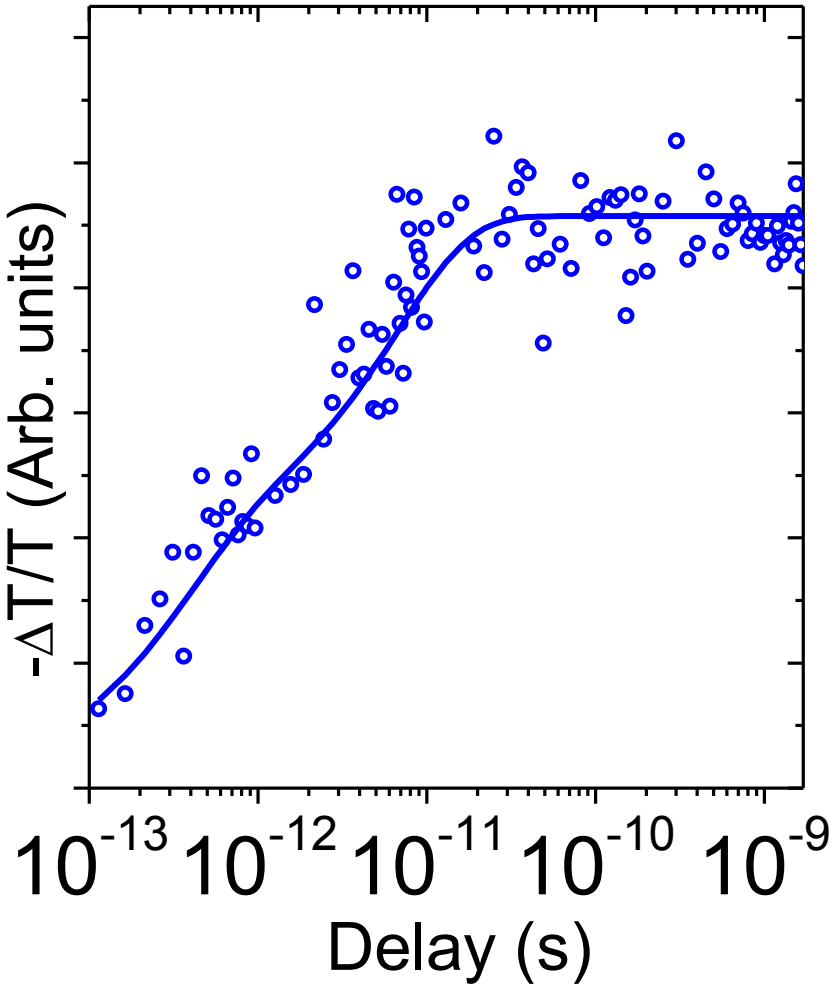
Initial version

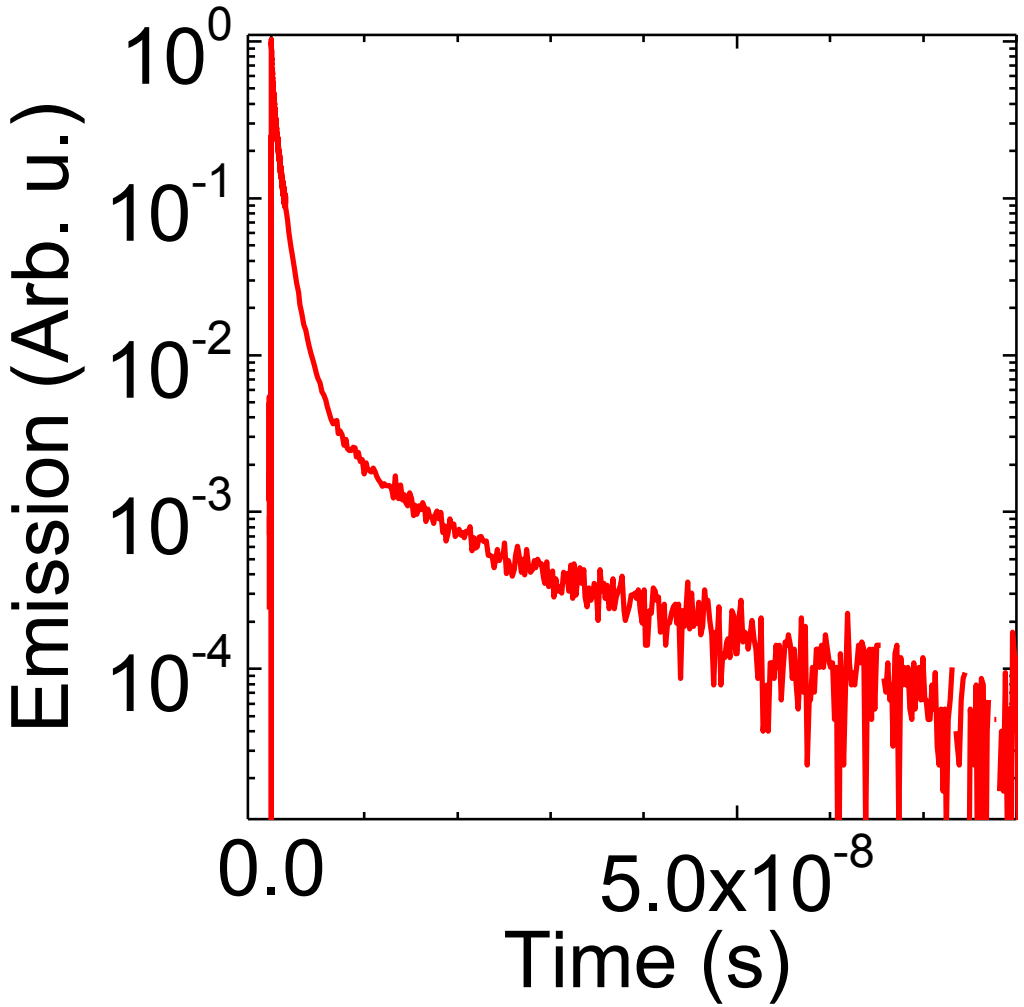
Choosing the axis type



Initial version

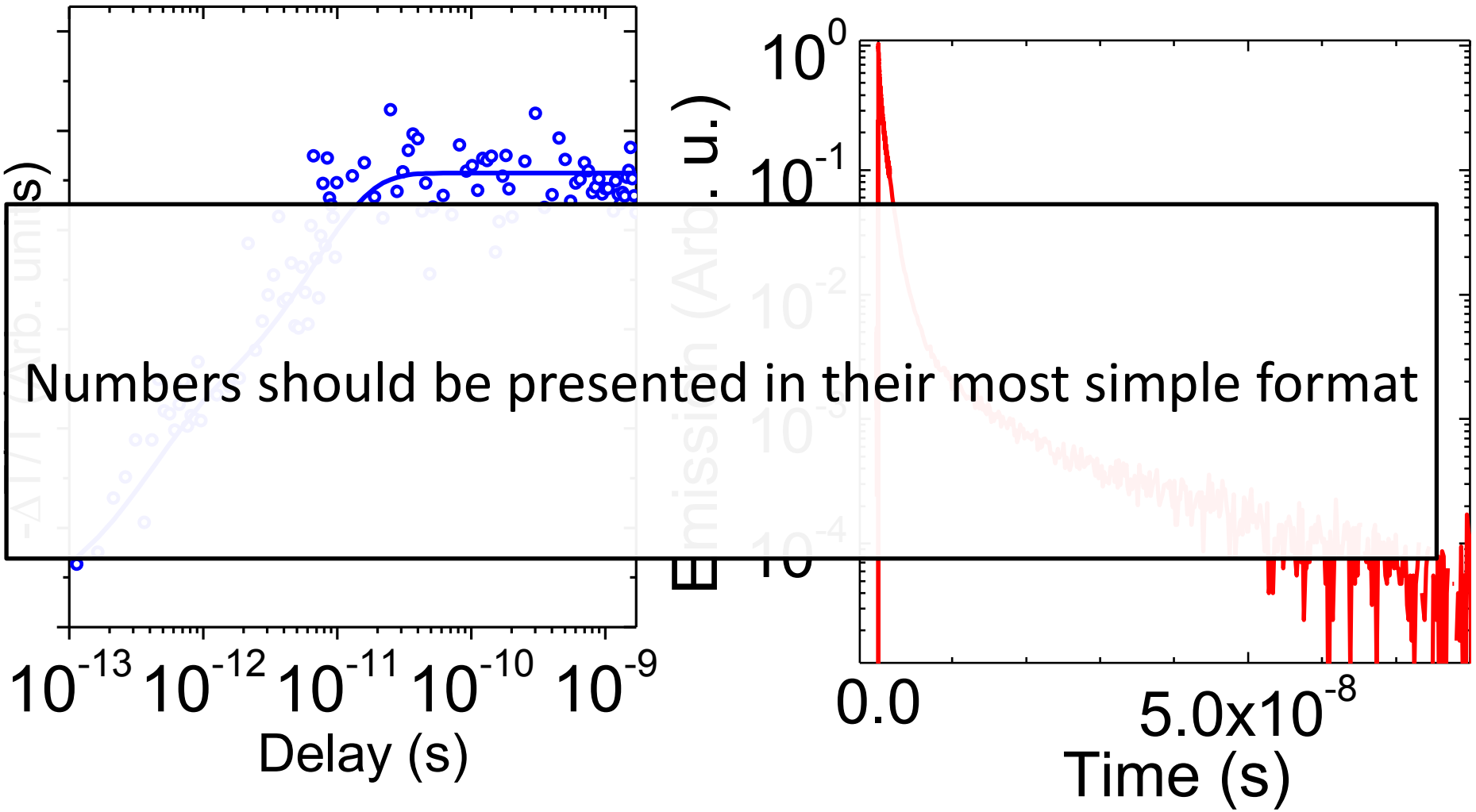
Choosing the number format





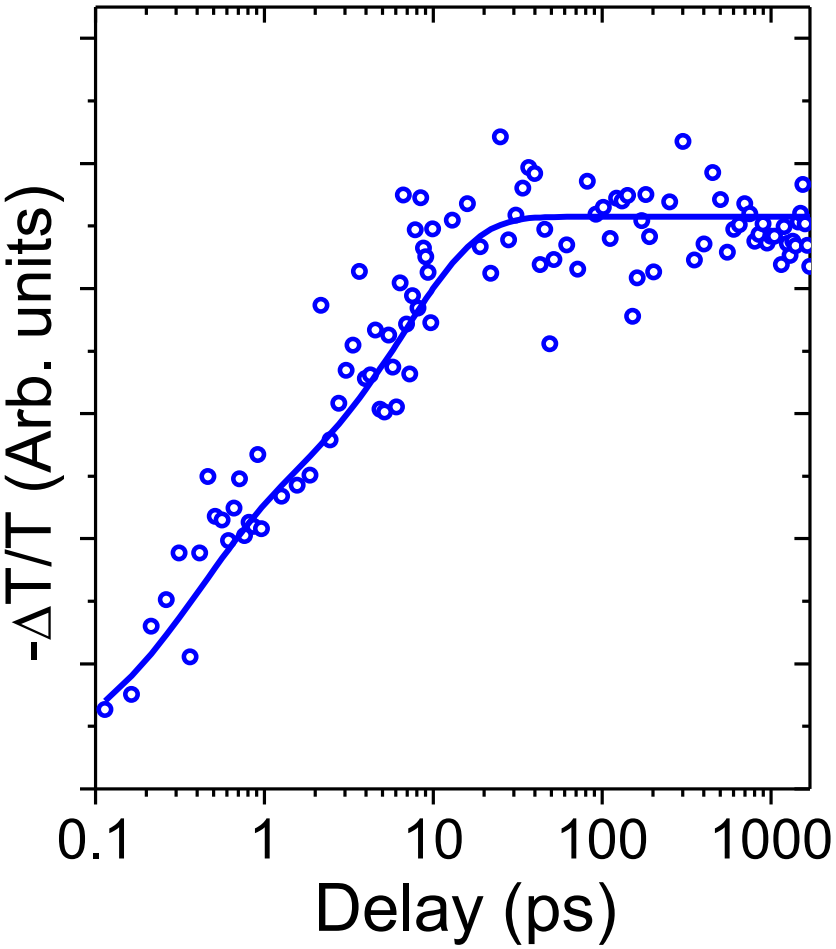
Corrected (?) version

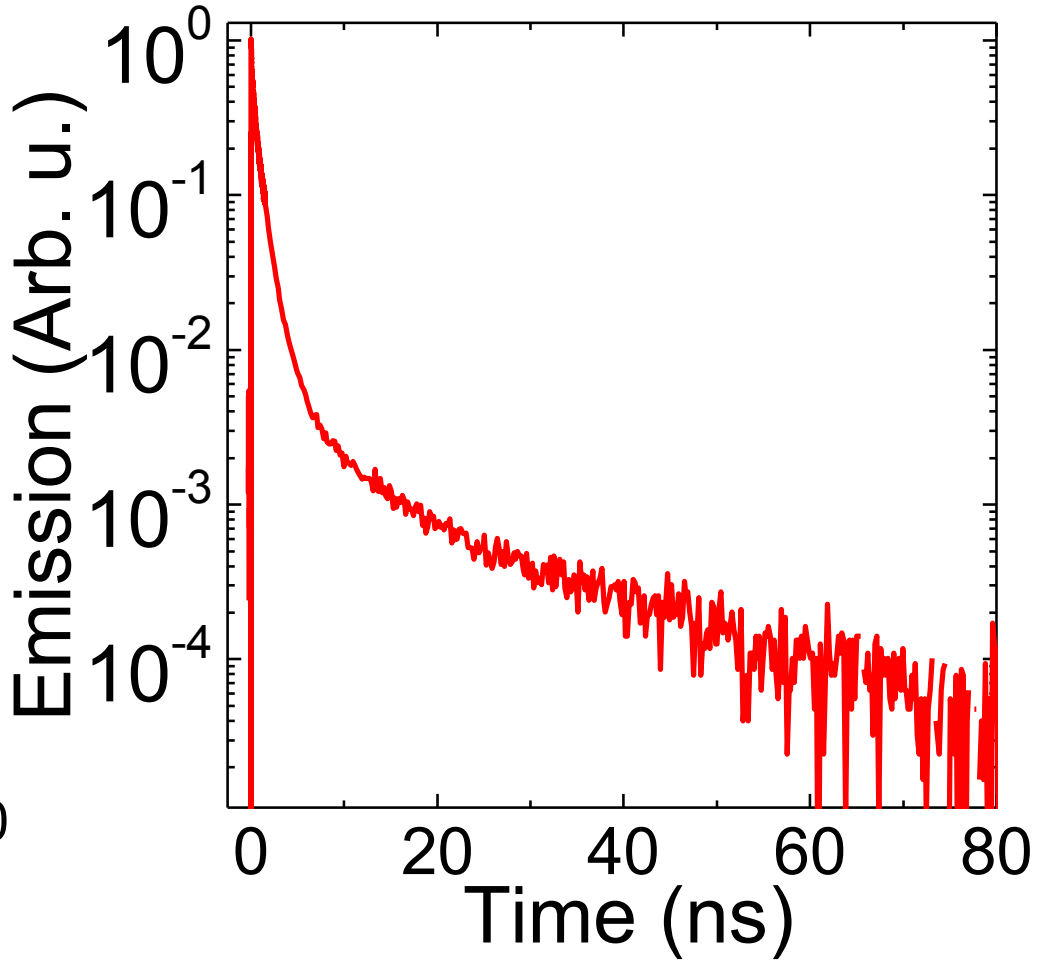
Choosing the number format



Corrected (?) version

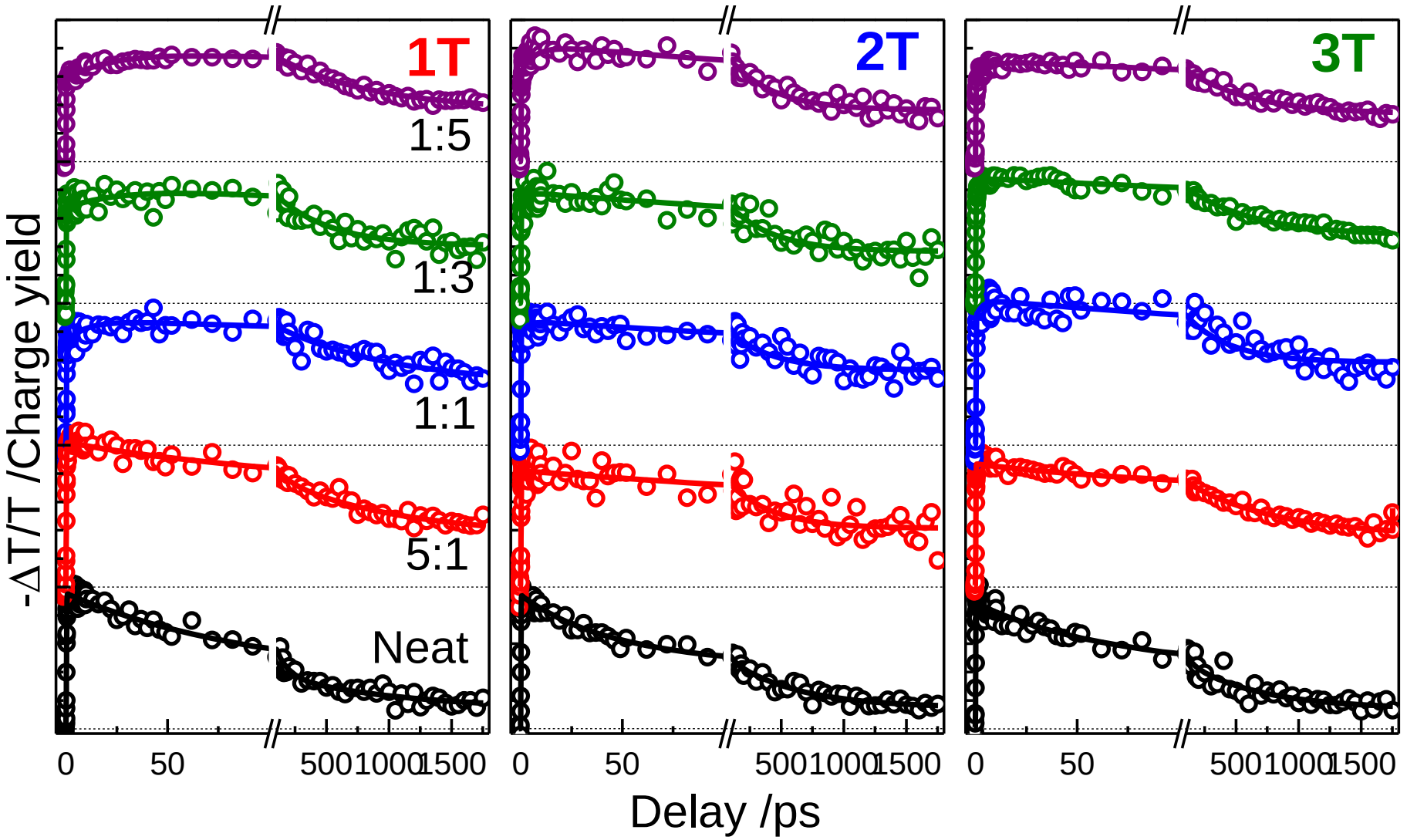
Choosing the number format





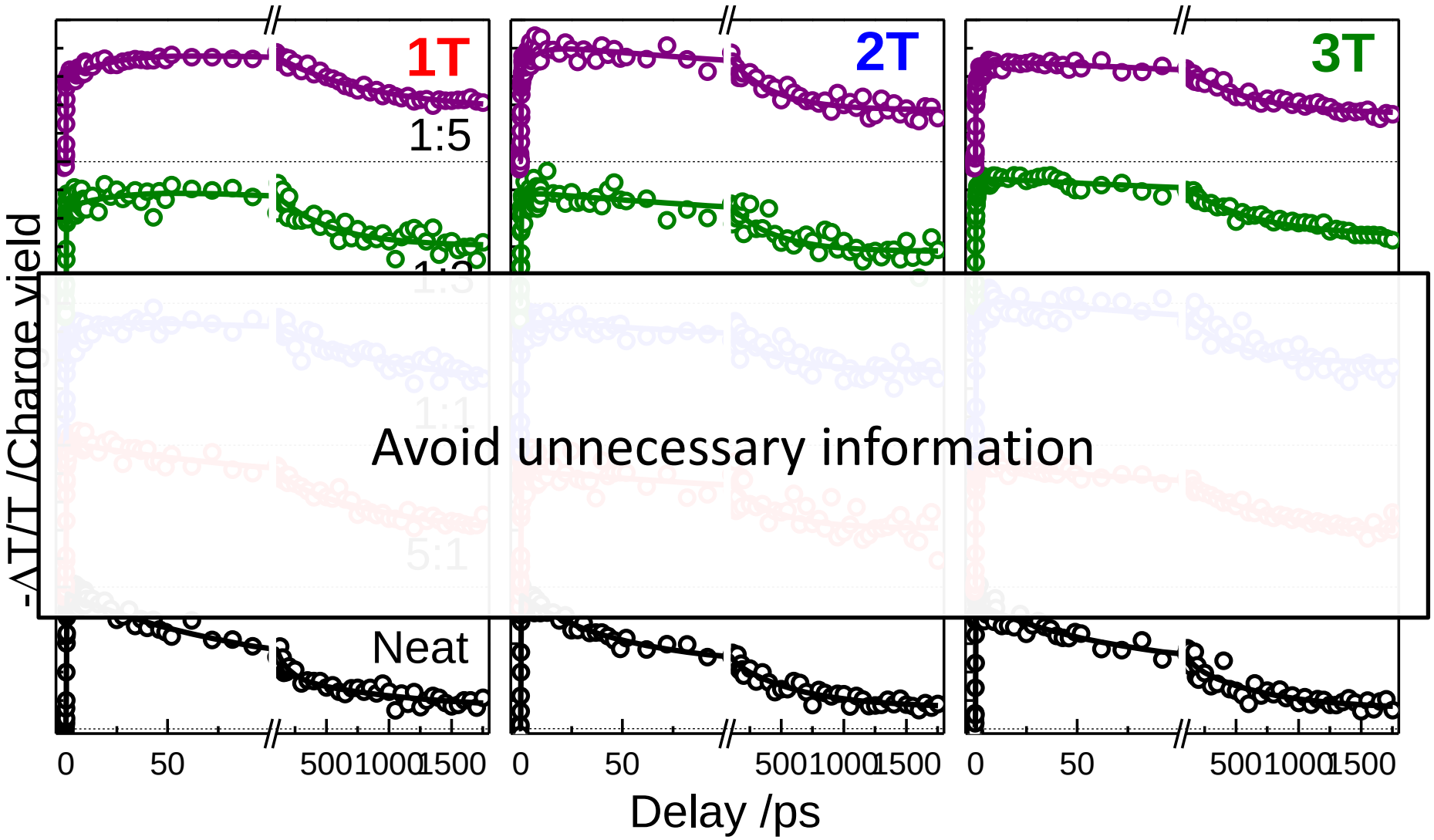
Corrected version

Choosing amount of data



Initial version

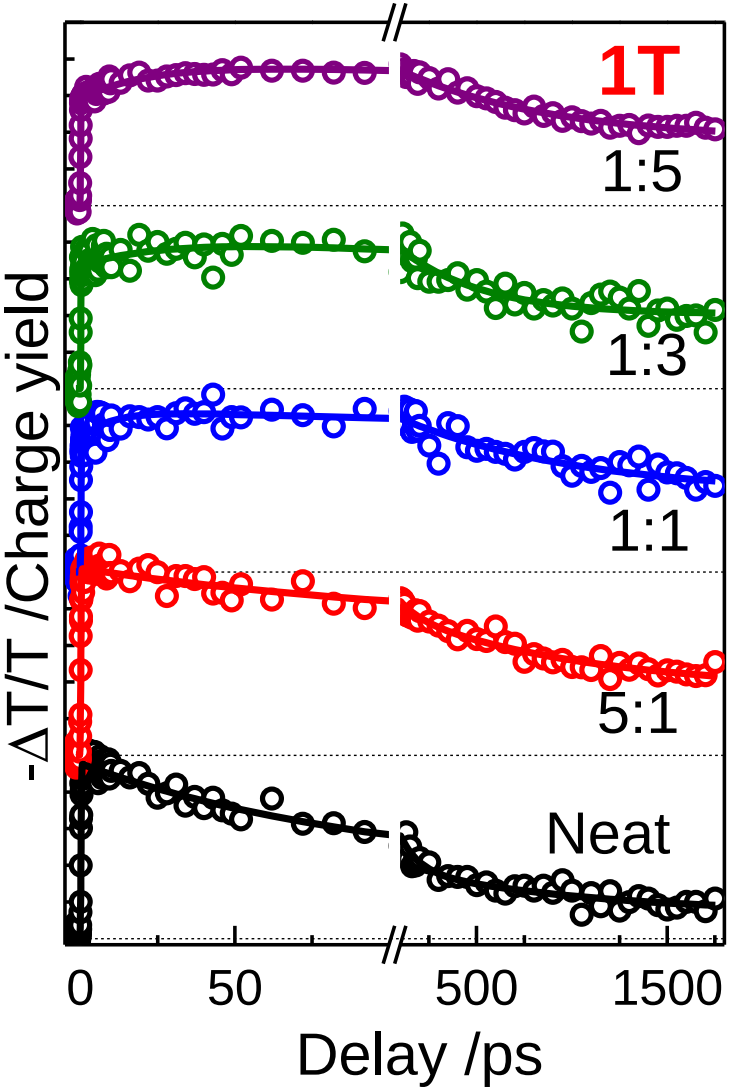
Choosing amount of data



Avoid unnecessary information

Initial version

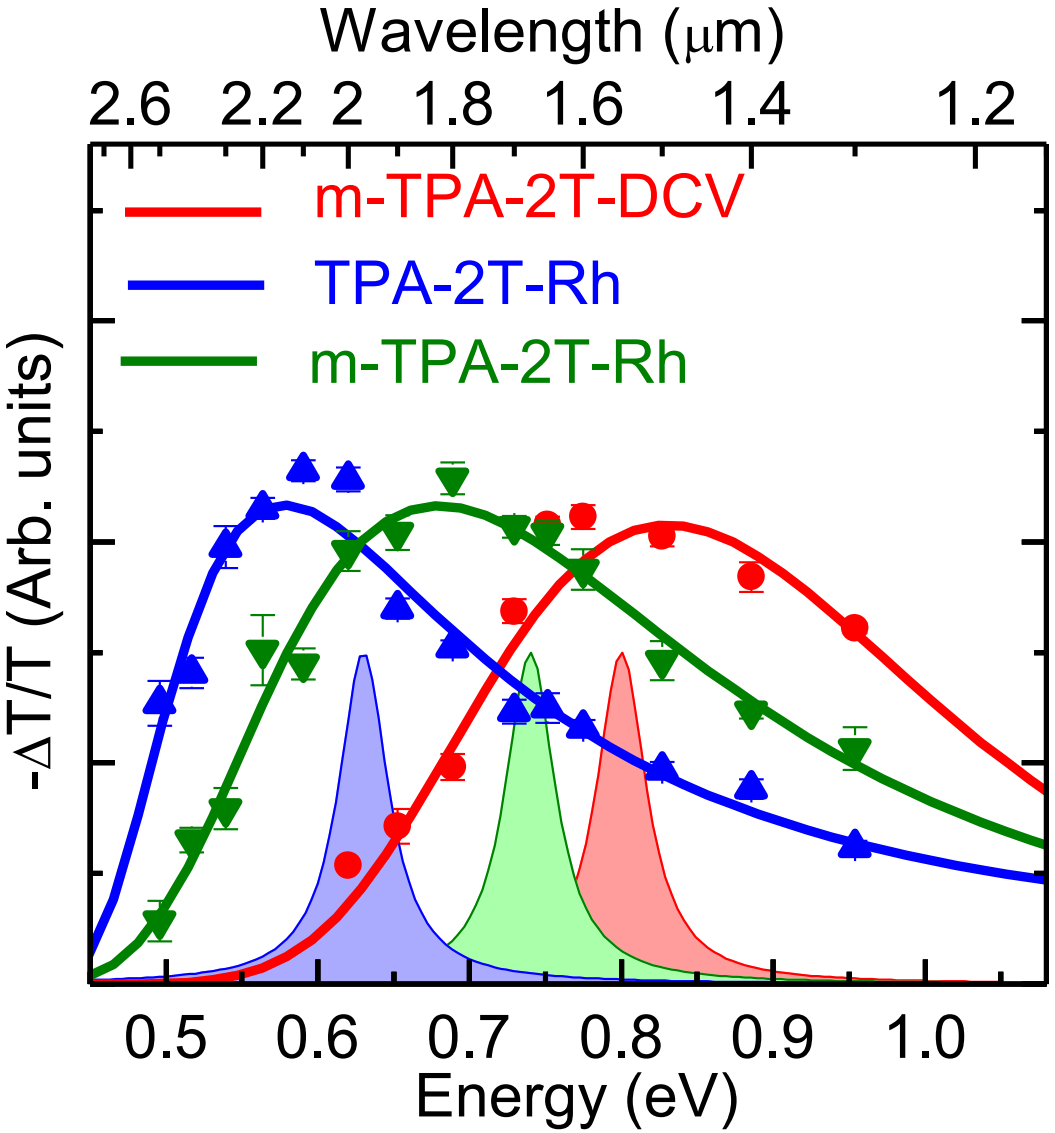
Choosing amount of data



Dynamics for other samples are similar

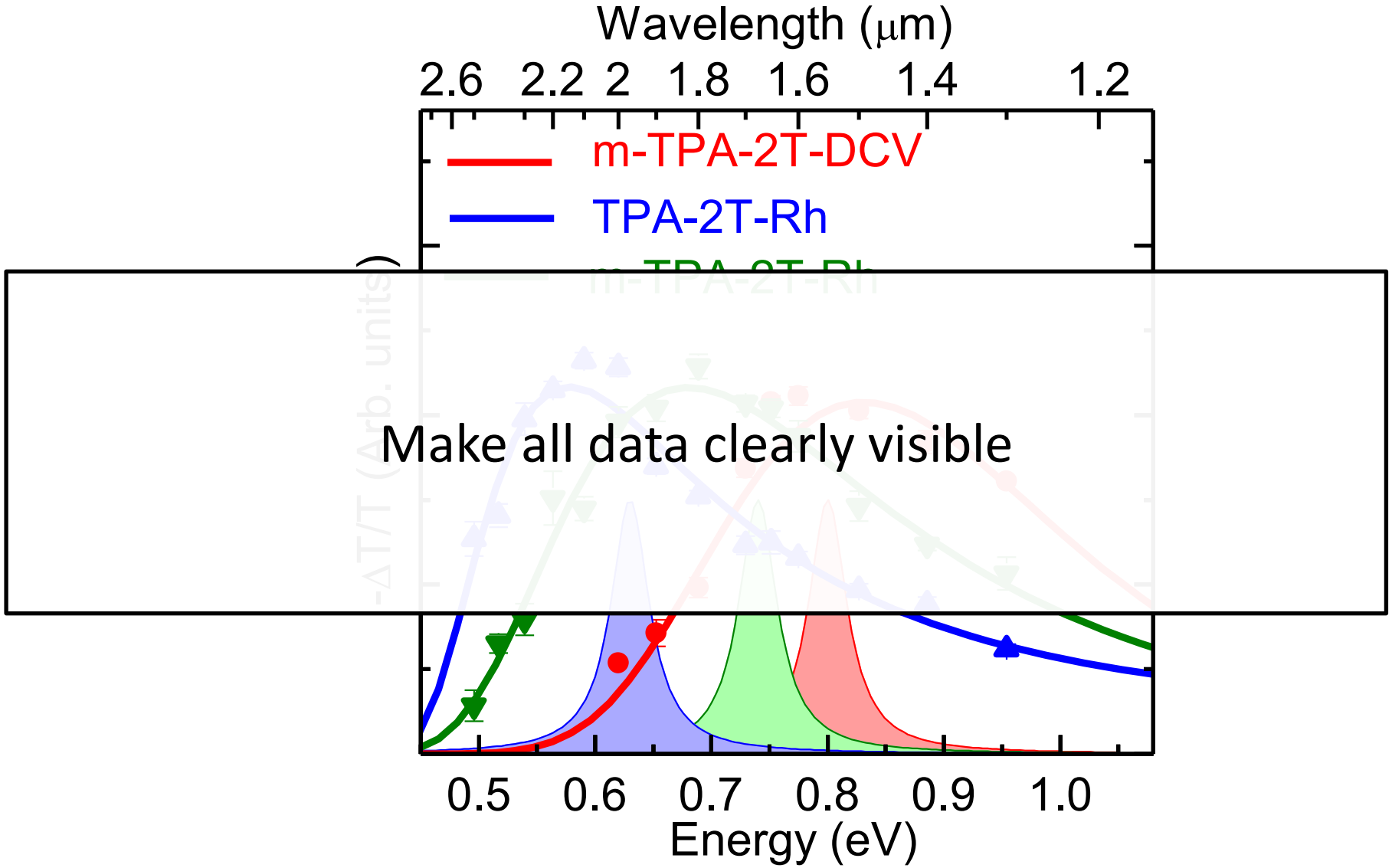
Corrected version

Combining multiple data



Initial version

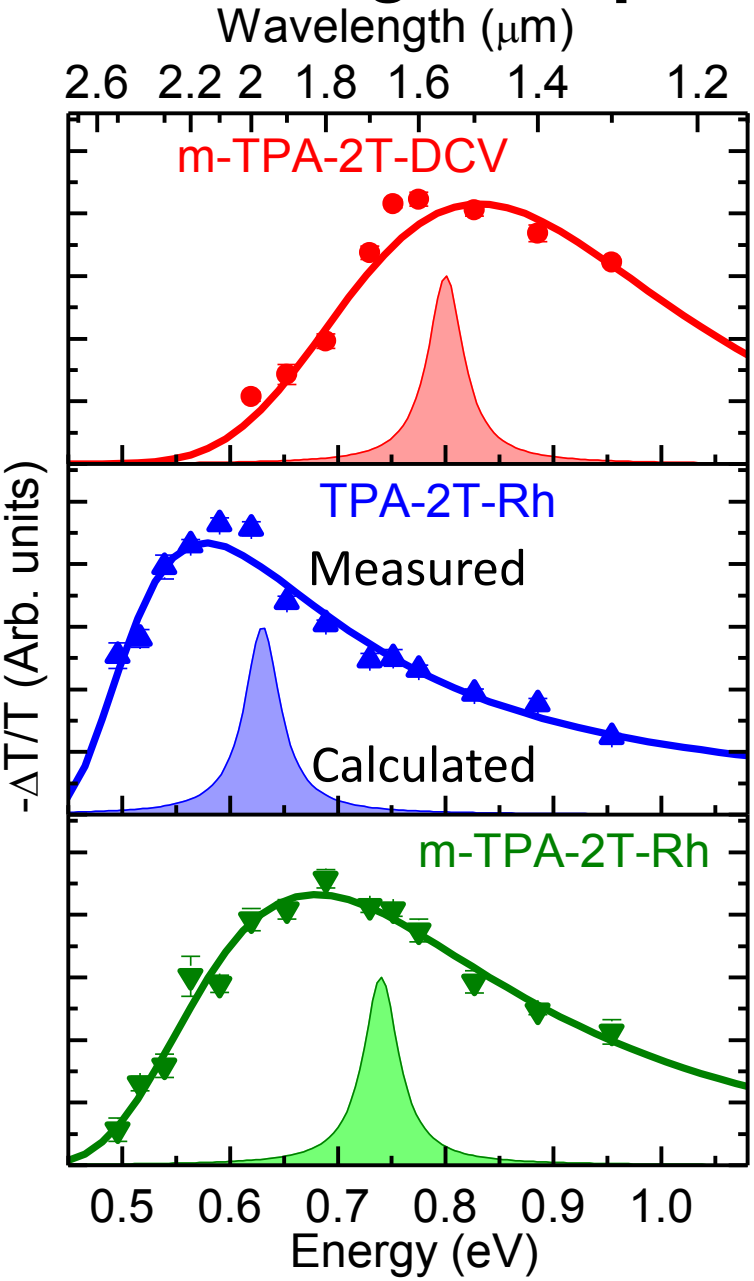
Combining multiple data



Make all data clearly visible

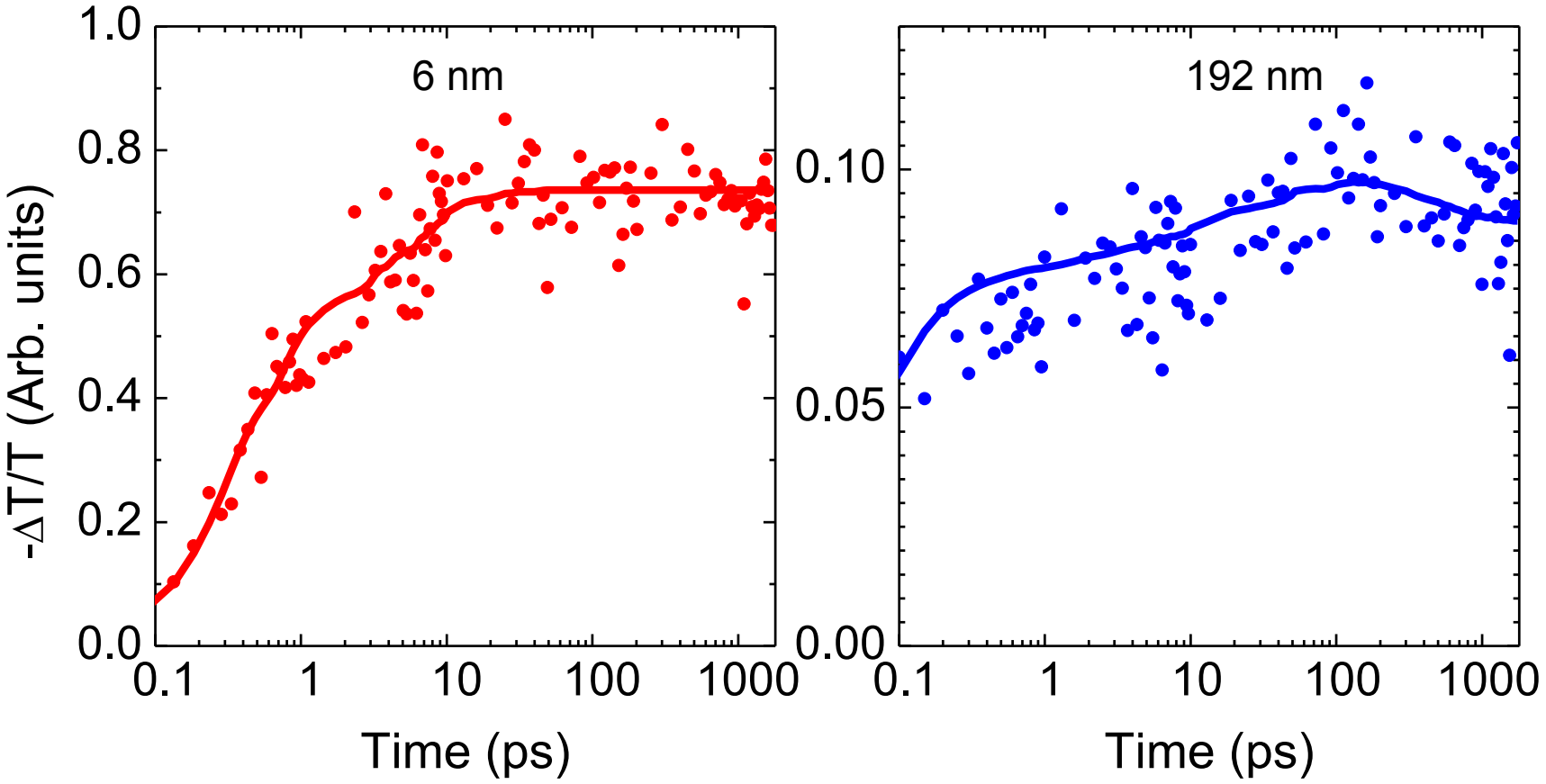
Initial version

Combining multiple data



Corrected version

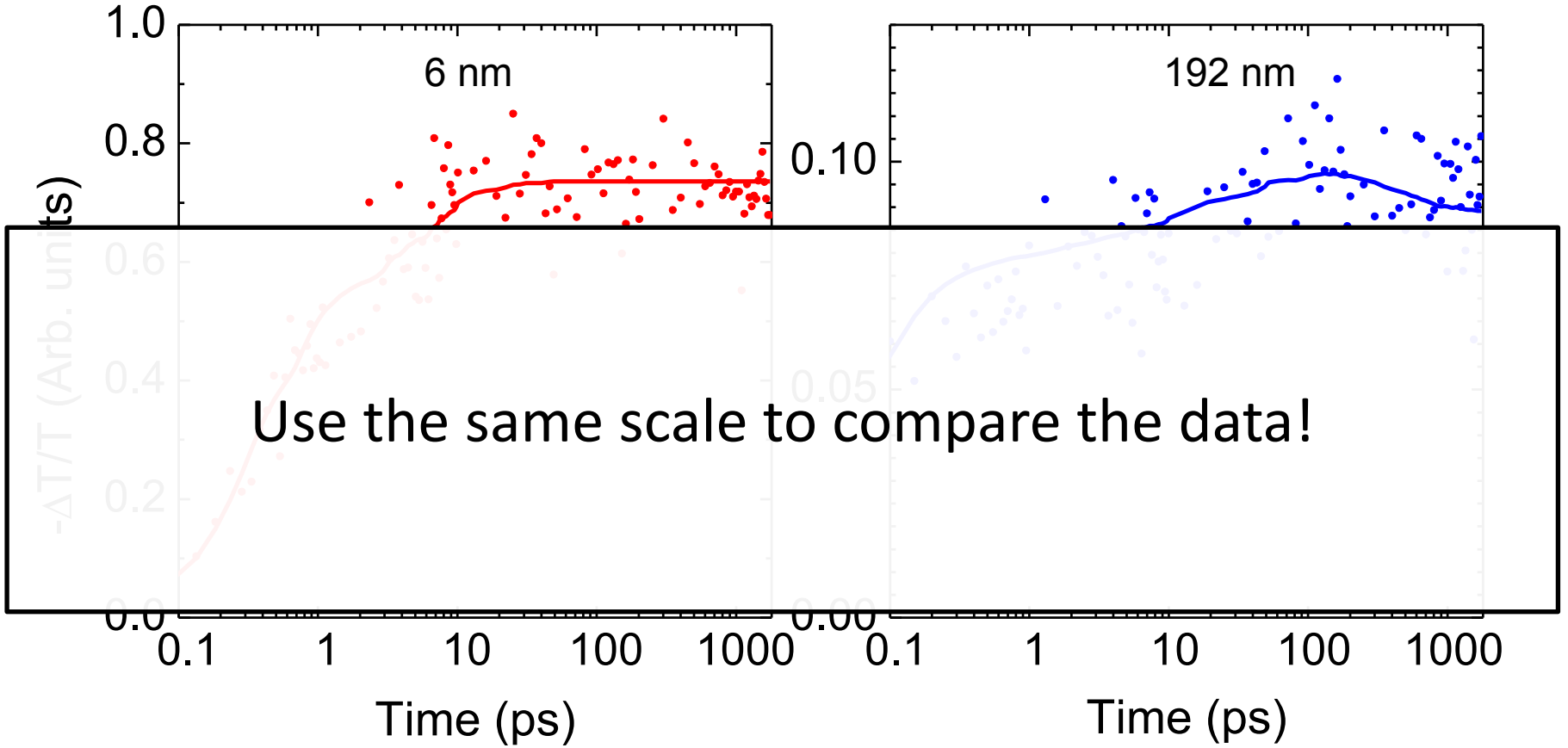
Comparing the data



Factor of ~10 difference in amplitude!

Initial version

Comparing the data

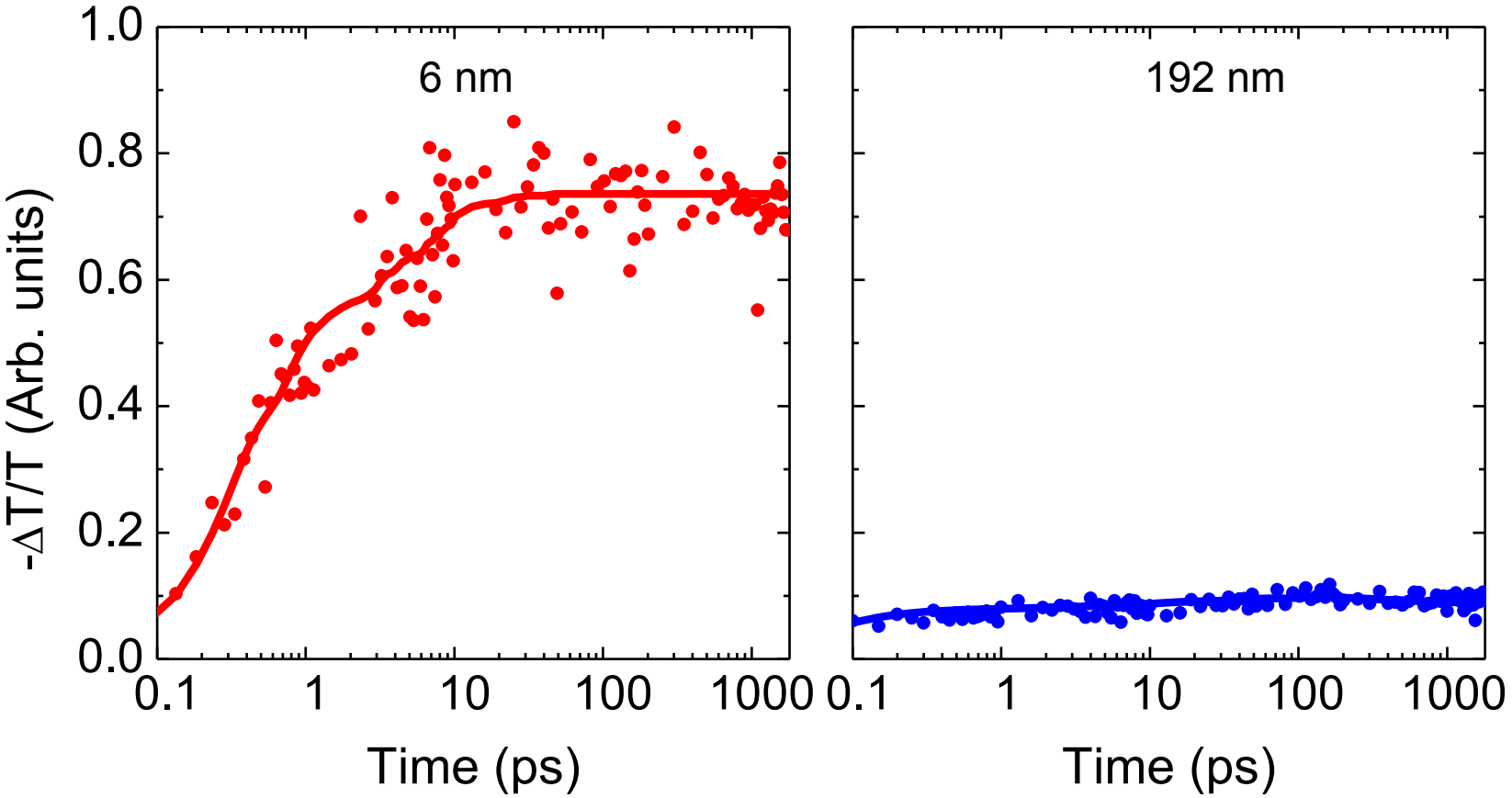


Use the same scale to compare the data!

Factor of ~10 difference in amplitude!

Initial version

Comparing the data



Factor of ~10 difference in amplitude!

Corrected version

Checklist for Graph-Making

- ✓Graph title
- ✓Label axis and units
- ✓Adequate tick labels and increment
- ✓Adequate plot type

  (line, scatter, bar/pie diagram, etc.)
- ✓Don't forget the legends
- ✓ Most appropriate scale type

  (linear, log, reciprocal etc)
- ✓Tick marks in the simplest format
- ✓Avoid unnecessary information
- ✓All data clearly visible