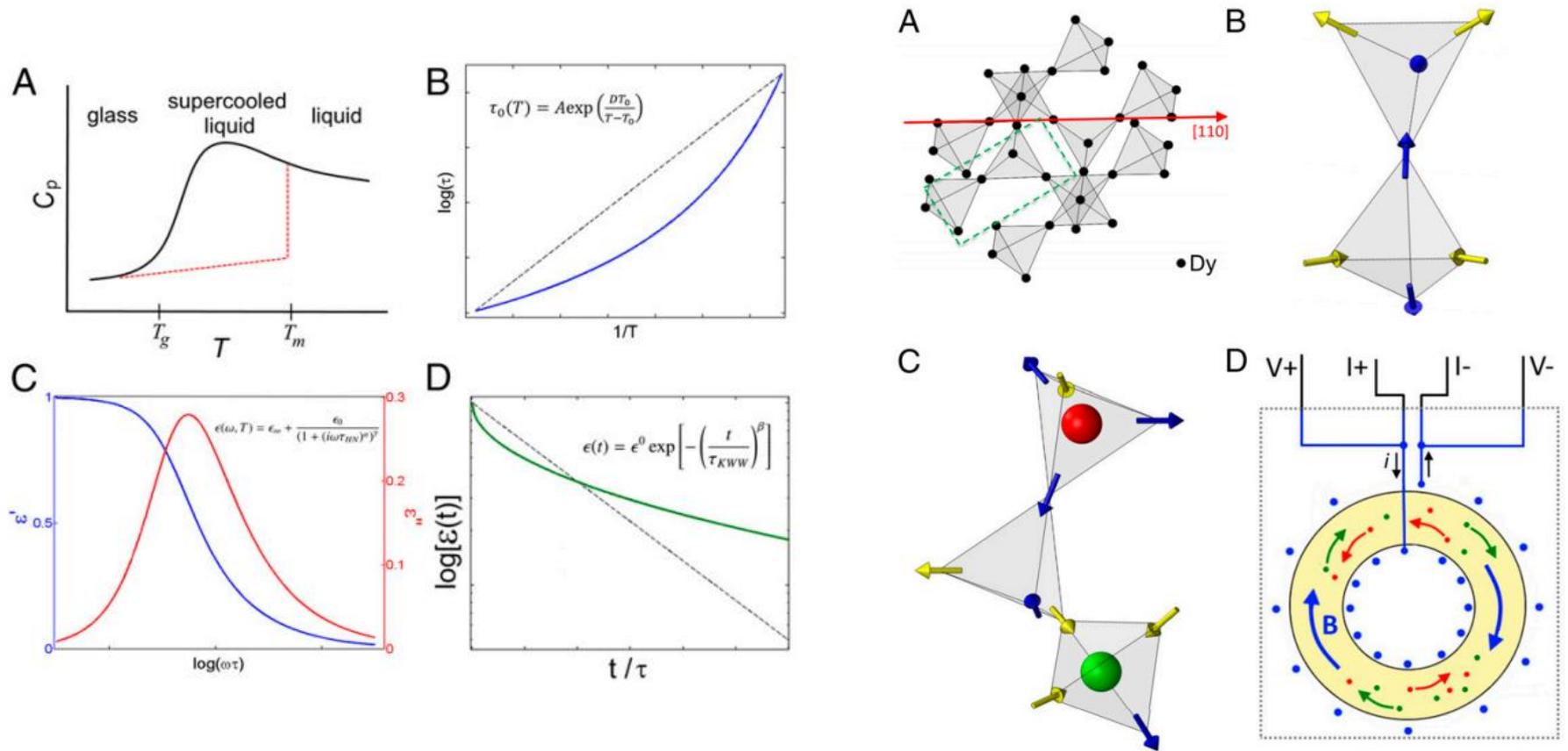# Figures

- Many referees, reviewers, scientists will only look at the figures in a paper
- The figures should also tell the whole story!
- Each figure should have a single point (or closely related points)
- Caption should explain every part of figure
- Different journals have different rules
  - Single, multi-panel
  - Number of figures, formatting
  - Read the website for authors and submission!
  - Copy editors may be involved with labeling & formatting

Different types…

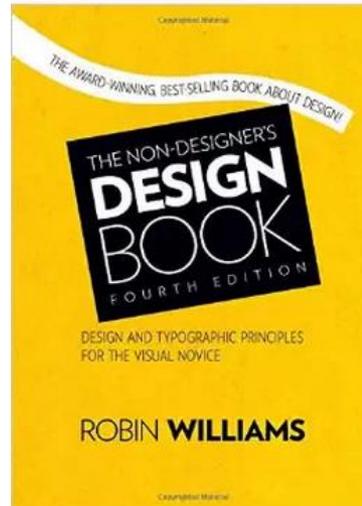Introductory/Summary Figure

Results Figure

Introductory Figure

Supercooled spin liquid state in the frustrated pyrochlore Dy$_2$Ti$_2$O$_7$

Ethan R. Kassner[a], Azar B. Eyvazov[a], Benjamin Pichler[a,b], Timothy J. S. Munsie[c,d], Hanna A. Dabkowska[c], Graeme M. Luke[c,d,e], and J. C. Séamus Davis[a,f,g,h,1]

Introductory / Summary Figure

- Purpose is to give an overview of the work early in the paper
- Sometimes used later in paper to summarize
- Often schematic
- Not data or results
- Important to (over-) simplify without introducing errors
- Important to be visually attractive

A great resource:

Learn a software platform:
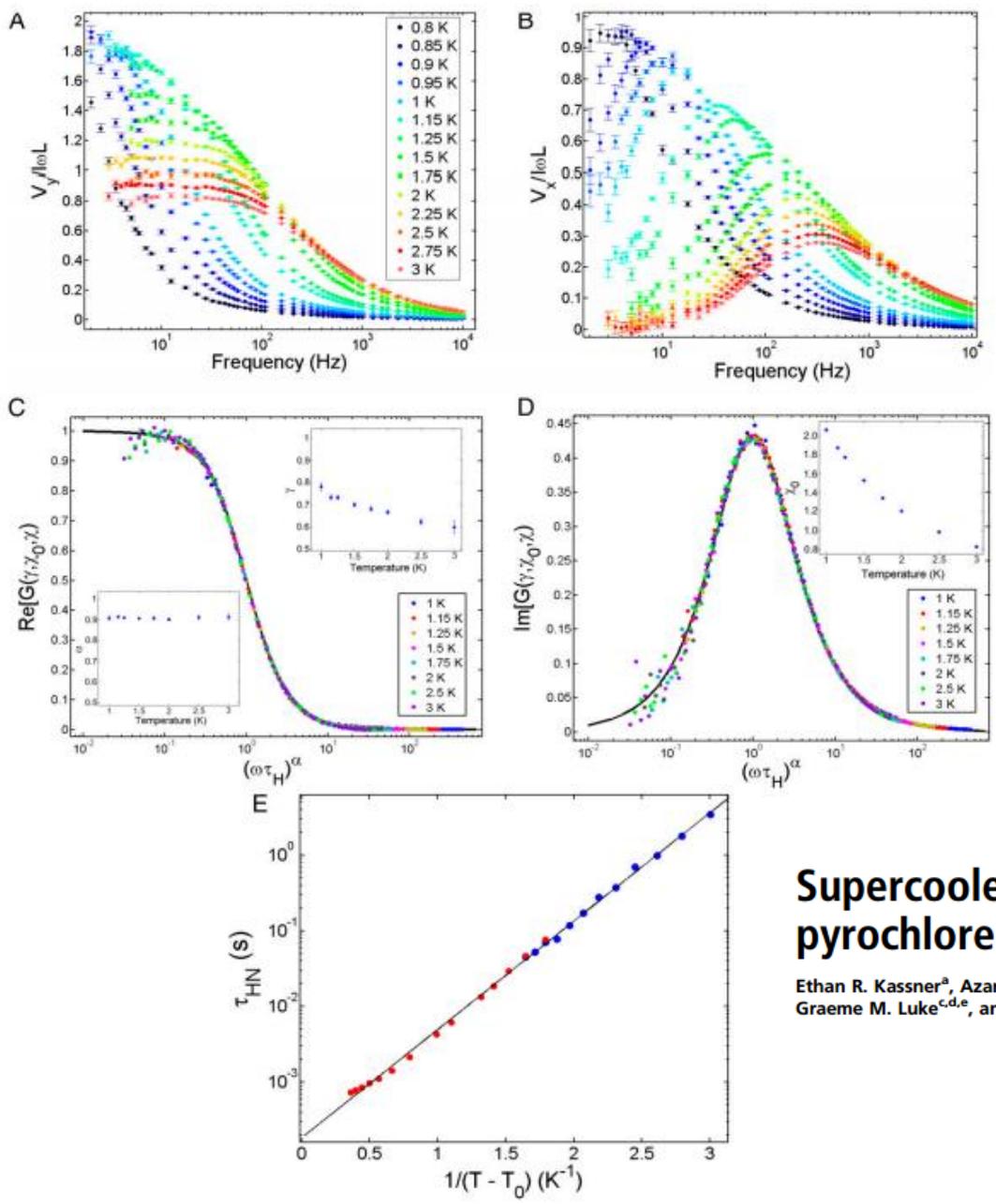Illustrator, CorelDraw, Powerpoint…

Example: Introductory Figure
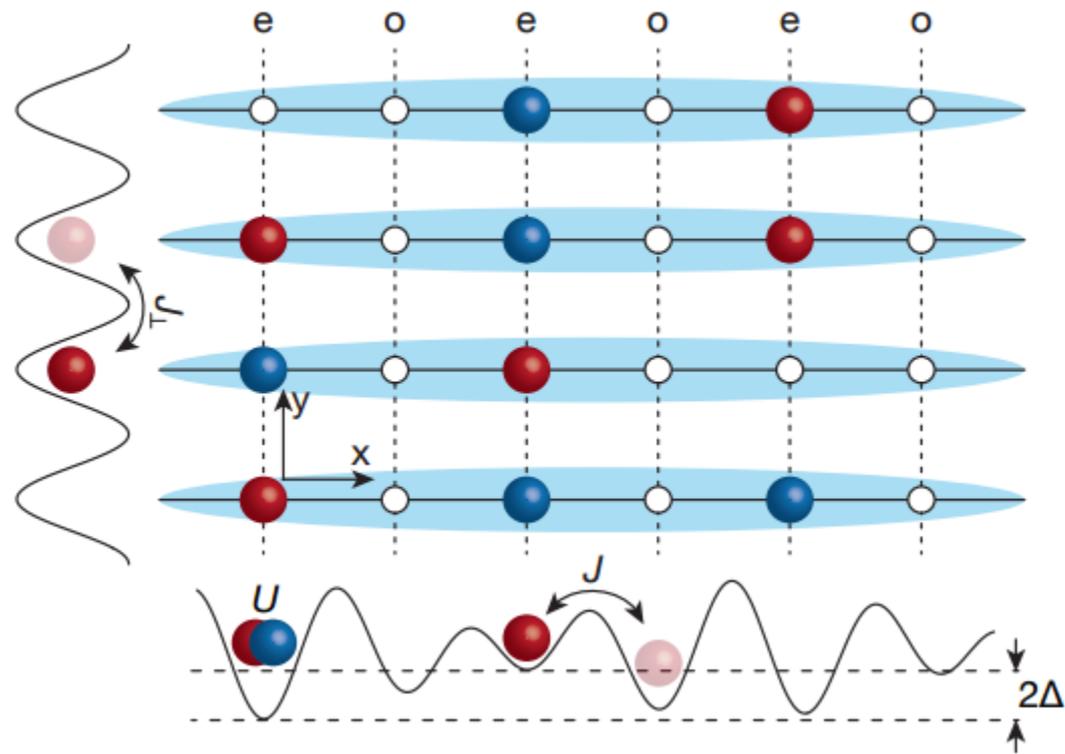
Coupling Identical 1D Many-Body Localized Systems

Pranjal Bordia,[1,2] Henrik P. Lüschen,[1,2] Sean S. Hodgman,[1,2] Michael Schreiber,[1,2] Immanuel Bloch,[1,2] and Ulrich Schneider[1,2,3]

Results Figure

Supercooled spin liquid state in the frustrated pyrochlore $Dy_2Ti_2O_7$

Ethan R. Kassner[a], Azar B. Eyvazov[a], Benjamin Pichler[a,b], Timothy J. S. Munsie[c,d], Hanna A. Dabkowska[c], Graeme M. Luke[c,d,e], and J. C. Séamus Davis[a,f,g,h,1]

Results Figure

- Presents data, numerical results, theory curve
- Usually a graph
- Can encode a lot of information
  - Be careful! Too much is deadly
- Important to label axes clearly and correctly
- Make sure points, lines, and error bars are visible and distinct

Another example: results figure
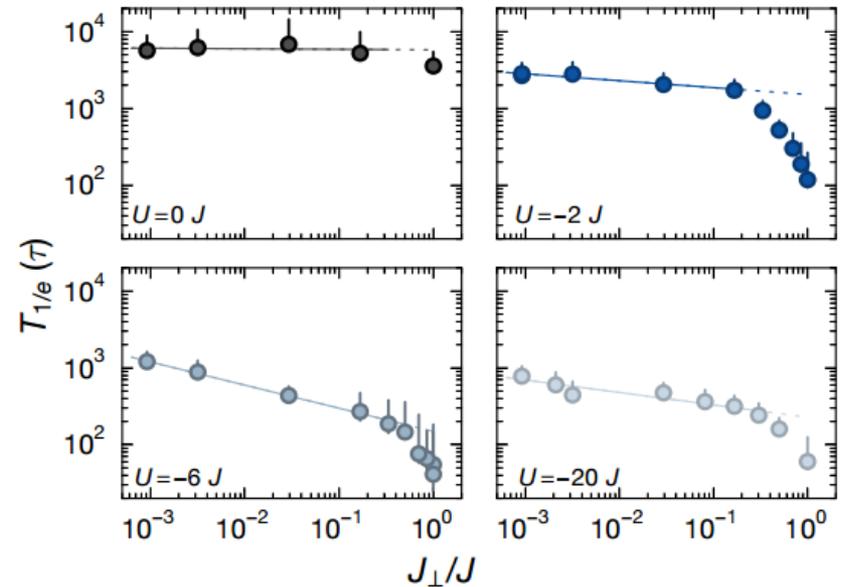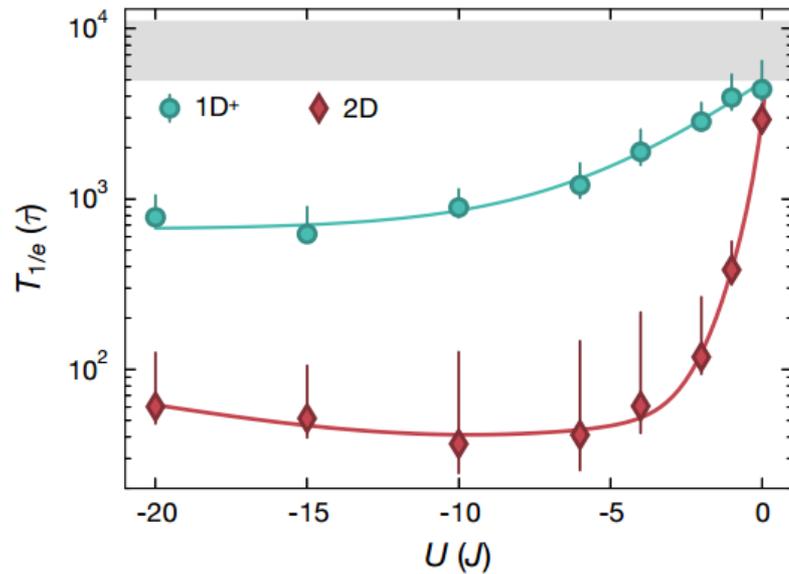
## Coupling Identical 1D Many-Body Localized Systems

Pranjal Bordia,[1,2] Henrik P. Lüschen,[1,2] Sean S. Hodgman,[1,2]
Michael Schreiber,[1,2] Immanuel Bloch,[1,2] and Ulrich Schneider[1,2,3]

General Advice

- Legible fonts
  - Print the figure at 100% (reproduction scale)
  - Line thickness
- Avoid similar colors, yellow, orange
- Avoid arbitrary units
  - Use physical, standard units
- Explain every part of the figure in the caption
  - symbols, insets, what each part is about
- Include scale bars & color bars
- Use high resolution, high contrast images
- Use vector graphics when possible

Problems

(a)   (b)
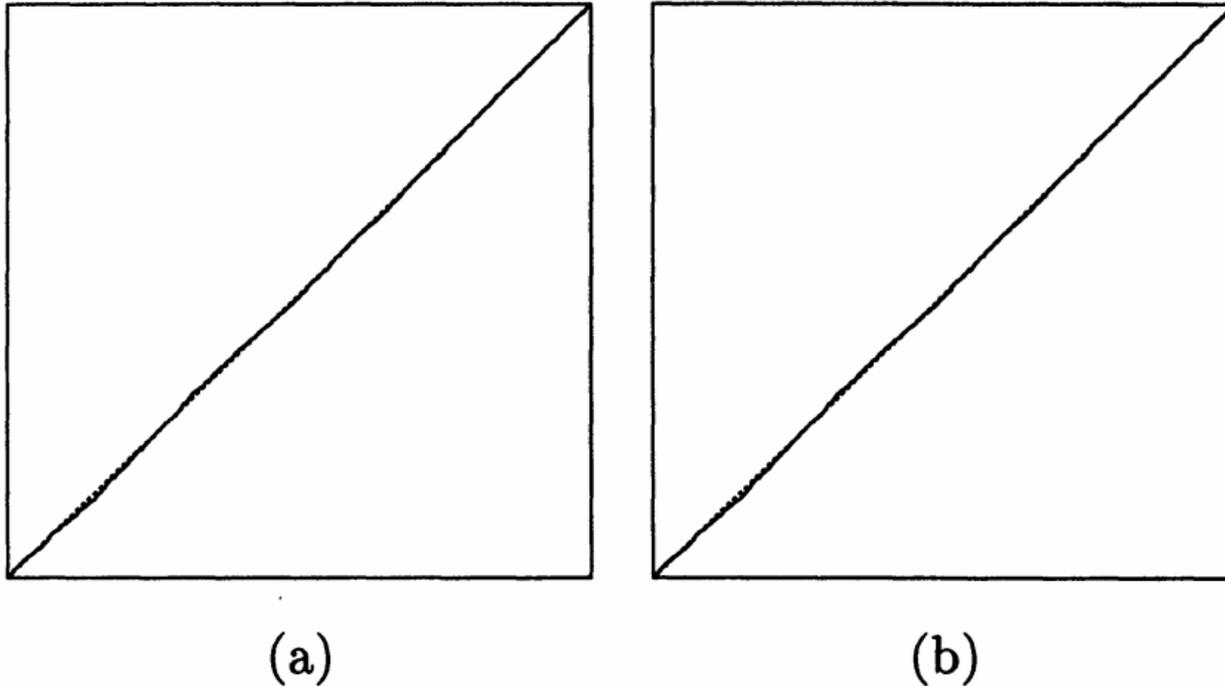
Figure 1. SRQ Plots of T_i/T_n (Vertical Axes) Against i/n (Horizontal Axes) for the Gibbs Sampler (a) and an Alternating Gibbs/Independence Sampler (b) for the Pump Failure Data Based on Runs of Length 5,000. Lines through the origin with unit slope are shown dashed; axis ranges are from 0 to 1 for all axes.
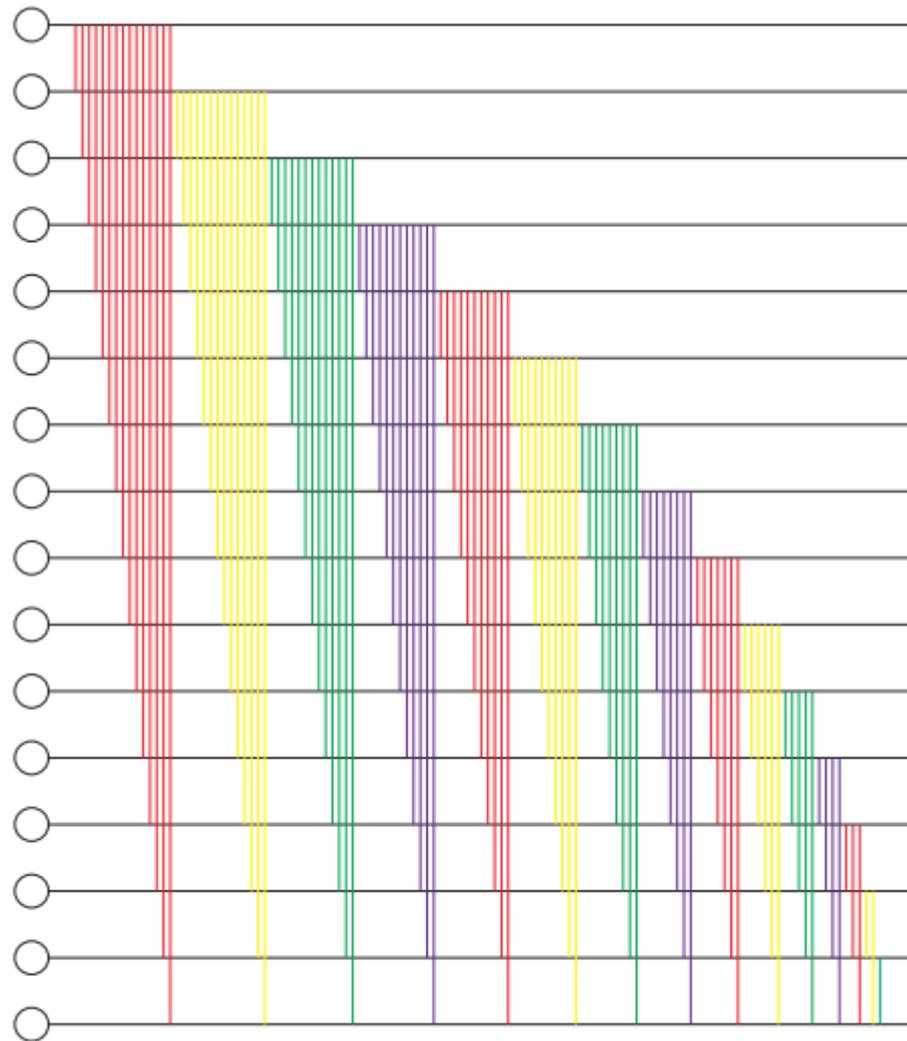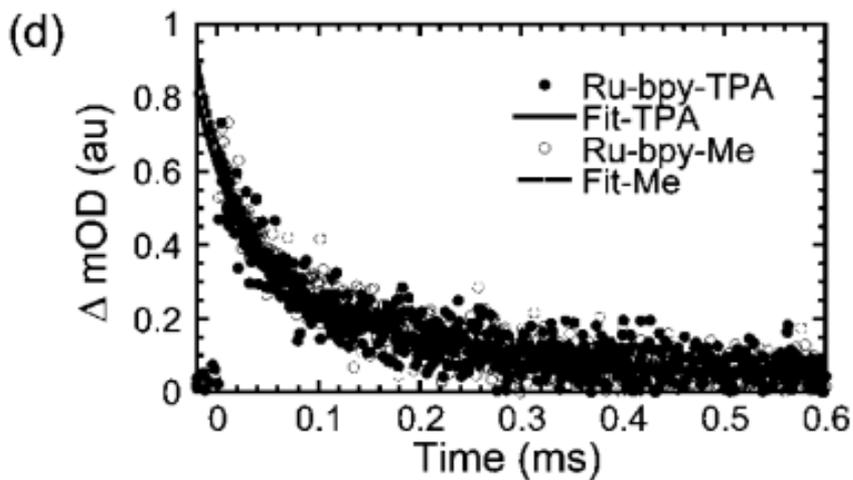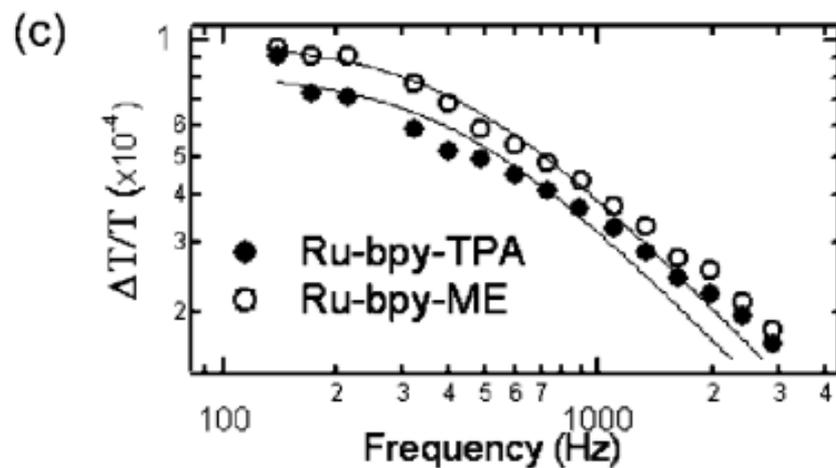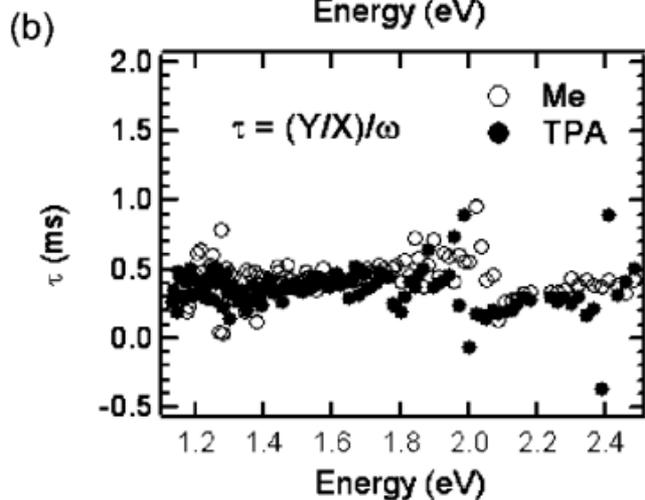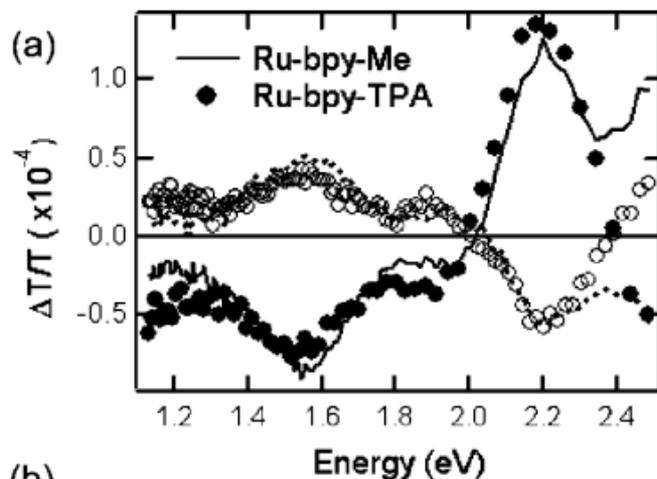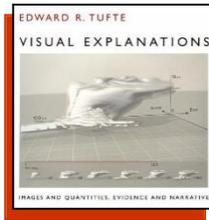
Problems

FIG. 2. (Color online) Possible layout for the 16-qubit chip.

Problems

More resources

- *Highly recommended:*
- If you're not acquainted with Edward Tufte's books, *Visual Explanations* should be required reading. He rules!

Edward R. Tufte, *Visual Explanations: Images and Quantities, Evidence and Narrative* (Cheshire, CT, Graphics Press, 1997).

- *Also highly recommended:*
- "Graphing Resources" (http://www.ncsu.edu/labwrite/res/res-homepage.htm), particularly their "Revising your Visuals" section.