How to Write a Paper

Or report, or Thesis, (or anything you like)

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Publication is required in Academia

Progress reports

- Students are often required to produce annual progress reports

Technical Documents

- Non-students are required to write technical documents and project proposals

Thesis

- A report of all you have done in your studies

Journals

- Dissemination of research results

Writing is hard

Collection of data

Planning of Manuscript

Initial draft

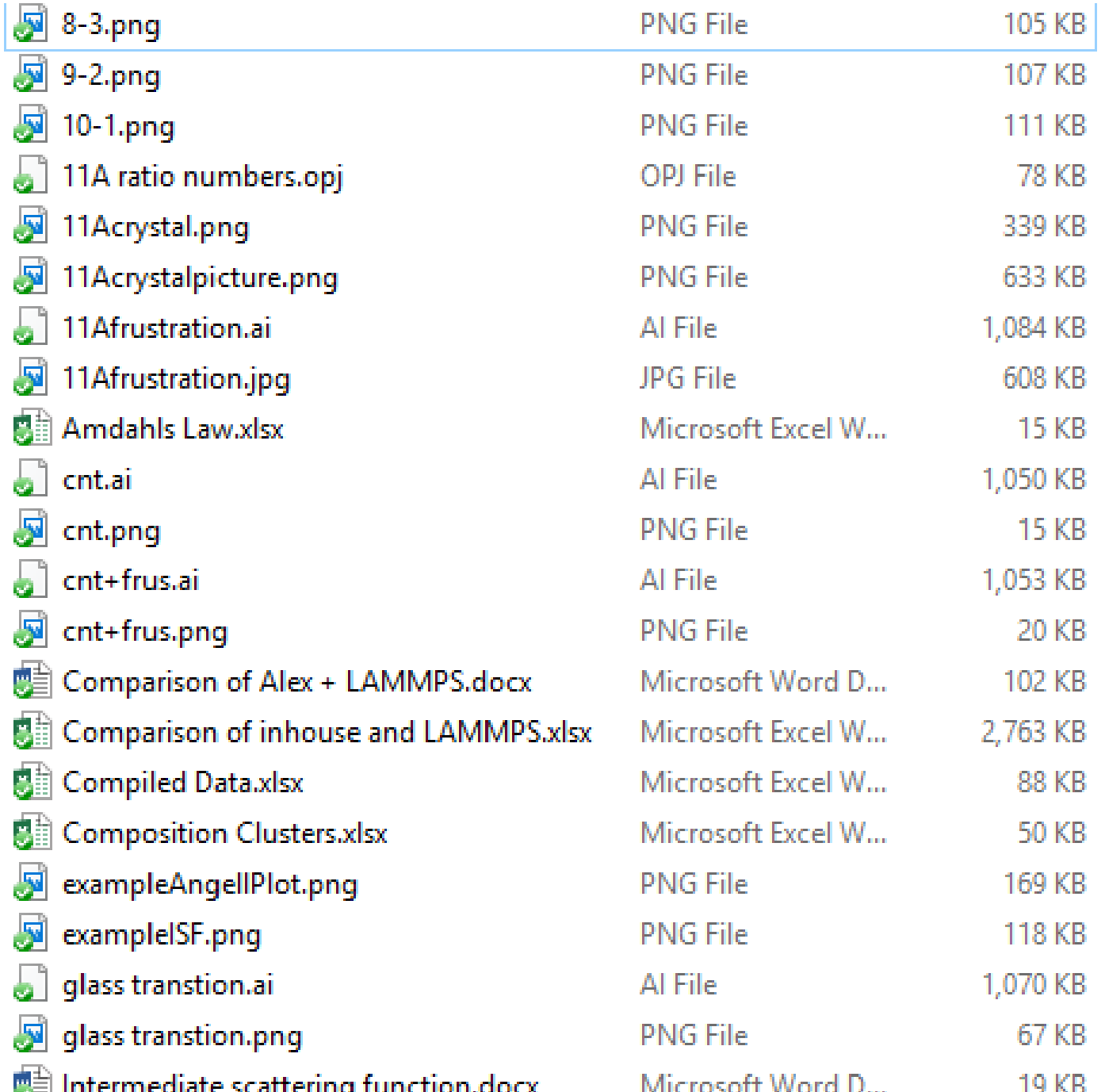
Collaborative improvements/editing

Publication

Here we focus on the improvements/editing section which often takes the most time of any of these steps (aside from data collection!)

Common problems when writing

Organization



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9-2.png	PNG File	107 KB
10-1.png	PNG File	111 KB
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cnt+frus.png	PNG File	20 KB
Comparison of Alex + LAMMPS.docx	Microsoft Word D...	102 KB
Comparison of inhouse and LAMMPS.xlsx	Microsoft Excel W...	2,763 KB
Compiled Data.xlsx	Microsoft Excel W...	88 KB
Composition Clusters.xlsx	Microsoft Excel W...	50 KB
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examplelSF.png	PNG File	118 KB
glass transtion.ai	AI File	1,070 KB
glass transtion.png	PNG File	67 KB
Intermediate scattering function.docx	Microsoft Word D...	19 KB

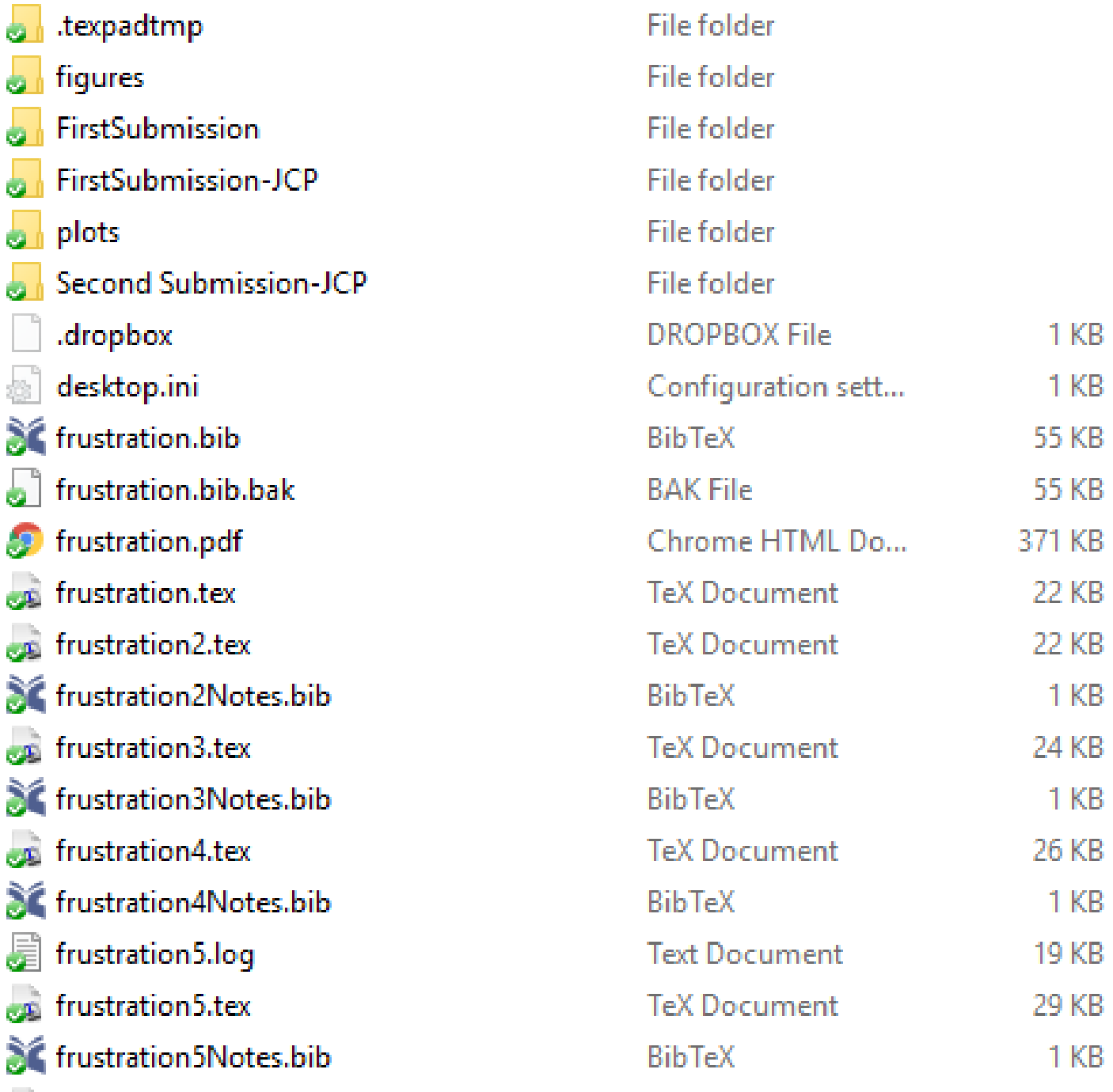
Organisation

Where has file XYZ gone?

What does something.important.doc do?

Where did the data for that figure go?

Version Control



Version Control

How can I keep an old version?

How can I collaborate with other authors?

How can I work across multiple machines?

Typesetting

In the KA mixture, the 11A structure can tessellate in 3D space, in the form of the Al_2Cu crystal structure as described theoretically by Fernandez and Harrowell (12) and shown in Figure 4. This means that geometric frustration is not present in the system and so we would expect crystallisation of the lowest energy structure to be favourable. Since this Al_2Cu crystal structure has never been reported in simulations of the KA mixture, it may be the case that there is another form of frustration in the KA system which restricts the formation of crystalline domains. Fernandez and Harrowell reported that the stoichiometry of the Al_2Cu unit cell is a 2:1 ratio of 'A' to 'B' particles, with both the capping particles of the square antiprism being the smaller 'B' particles. This unit cell corresponds to overlapping 11A's of composition A_8B_3 as shown in Figure 3. It is possible that in a similar fashion to the Wahnström mixture, the KA system does not show evidence of crystallisation into the Al_2Cu form because only a small proportion of the 11A's in the normal KA mixture are of the A_8B_3 composition compatible with the Al_2Cu crystal.

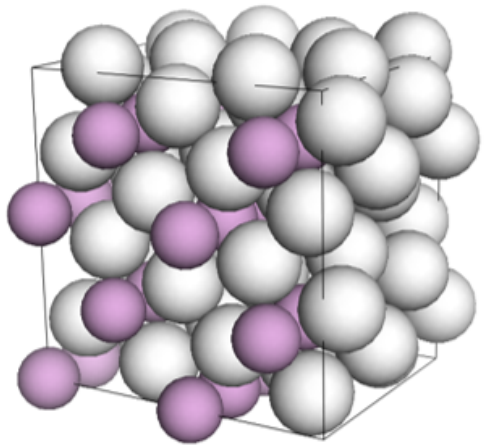


Figure 4 – A 2x2 unit cell of the Al_2Cu crystal with the larger A particles shown in white and the smaller B particles in purple

Typesetting

Why wont this stupid figure align with the text?

Why is the kerning all off if I justify text?

Can’t I just fill in a template?

Can I make it pretty without spending forever?

Citations

27. Mauro JC, Yue Y, Ellison AJ, Gupta PK, Allan DC. Viscosity of glass-forming liquids. Proceedings of the National Academy of Sciences. 2009;106(47):19780-4.
28. Laughlin WT, Uhlmann DR. Viscous flow in simple organic liquids. The Journal of Physical Chemistry. 1972;76(16):2317-25.
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32. Middleton TF, Wales DJ. Comparison of kinetic Monte Carlo and molecular dynamics simulations of diffusion in a model glass former. The Journal of Chemical Physics. 2004;120(17):8134-43.
33. Kob W, Barrat J-L. Fluctuations, response and aging dynamics in a simple glass-forming liquid out of equilibrium. Eur Phys J B. 2000;13(2):319-33.
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37. Jack RL, Hedges LO, Garrahan JP, Chandler D. Preparation and Relaxation of Very Stable Glassy States of a Simulated Liquid. Physical Review Letters. 2011;107(27):275702.
38. Testard V, Berthier L, Kob W. Influence of the Glass Transition on the Liquid-Gas Spinodal

Citations

How can I speed up collection of citations?

How can I automate citations in my work?

What if my Journal needs a different format?

How can I keep track of all of my citations easily?

Figures

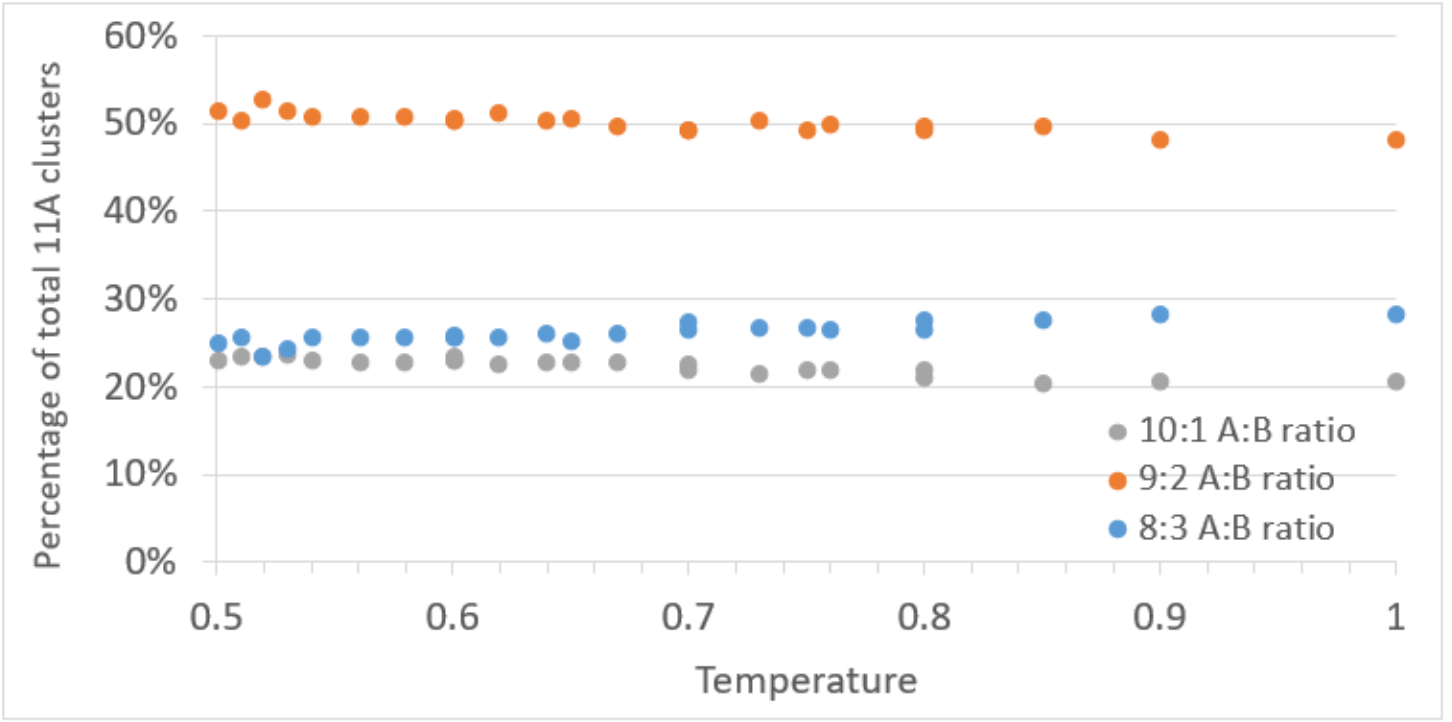

Figure 23 – Composition of 11A clusters in a 2:1 simulation with varying temperature

Figures

How can I make professional looking figures?

How can I make small updates without redoing the figures?

How can I keep my data closer to my figures?