

HLWYM HEmails

From: Roberto Pabalan
Sent: Friday, March 05, 2004 11:26 AM
To: Miriam Juckett
Cc: Lietai Yang
Subject: RE: SOLCALC data

How about after the seminar?

My feeling is we need data for the mixtures. The temperature dependence is not large for the single salts, and it is better to have reproducible results at 10 to 15 C intervals than at every 5 C. Because thermodynamic measurements and parameters generally are available in the literature at 25 C, I would prefer experiments (with duplicates) at 25 C, instead of 20 and 30 (not much change occurs in that range), plus 40, 50, 60, 70, and 80. Once we get the new humidity chamber and if it works at higher temperature, you can increase the temperature interval to every 20 or 25 C. Like you said, there are other things to do --- data for mixtures would be a significant contribution to the literature!

bobby

-----Original Message-----

From: Miriam Juckett [mailto:mjuckett@cnwra.swri.edu]
Sent: Friday, March 05, 2004 9:57 AM
To: rpabalan@cnwra.swri.edu
Subject: RE: SOLCALC data

Bobby,

I think we'd better have a sit-down conference with the 3 of us and refocus a little. Lietai asked me to get data at 30C and 20C (and 25 and 35 also) for trending purposes. It would really help me out if we could get a good synopsis of what we're really after with this data, because I'm not sure who wants what and why. If I don't need to do the low temperature tests, then I'm wasting time doing them when there are other things to be done.

Miriam

-----Original Message-----

From: R Pabalan [mailto:rpabalan@cnwra.swri.edu]
Sent: Friday, March 05, 2004 9:53 AM
To: mjuckett@cnwra.swri.edu
Subject: RE: SOLCALC data

Okay, but I don't think we need data at 30 C.

bobby

-----Original Message-----

From: Miriam Juckett [mailto:mjuckett@cnwra.swri.edu]
Sent: Friday, March 05, 2004 9:18 AM
To: rpabalan@cnwra.swri.edu
Cc: 'Lietai Yang'
Subject: RE: SOLCALC data

20C is about what temperature it is in the lab anyway. It's been pretty consistently cold, so I think it will be ok. I made up a couple of solutions yesterday and will make more today and allow them to sit over the weekend.

Let me know if you get some good estimates at the low temperatures.

Thanks.

-----Original Message-----

From: R Pabalan [mailto:rpabalan@cnwra.swri.edu]

Sent: Friday, March 05, 2004 8:38 AM
To: mjuckett@cnwra.swri.edu
Cc: 'Lietai Yang'
Subject: RE: SOLCALC data

Miriam,

I don't think you can run 20 C experiments without a chiller hooked up to your oven. There is a chiller in B. 51 that you may be able to borrow from Ron Green. If none is available, room temperature measurement is okay. It is not critical to have data at 20 C.

I'll see if I can run Geochemist's Workbench to calculate the DRH for your single salts at 25 C.

bobby

-----Original Message-----

From: Miriam Juckett [mailto:mjuckett@cnwra.swri.edu]
Sent: Thursday, March 04, 2004 5:20 PM
To: rpabalan@cnwra.swri.edu; 'Lietai Yang'
Subject: RE: SOLCALC data

Here's my gameplan:

The hydration states are different at low temperatures for several of the salts. I am going to remake the solutions for the low temperature tests for the following reasons:

- 1) I haven't done the measurements at 20C and 30C yet anyway
- 2) Since some of the salts have waters of hydration lost at high temperatures, I would prefer to start with the reagents all over again rather than assume full re-hydration
- 3) It won't take more than a day to remake all the single salt solutions
- 4) The new solutions will meet the criteria Lietai listed (solution completely covering the salt, no salt on the sides of the flasks)
- 5) The two data points gathered for each of the salts with the criteria from #3 can be compared with the SOLCALC/Greenspan values, and if improved, I can continue to redo and increase temperature for the rest of the data points.

Please bear in mind that I only have two ovens to work with, and I allow considerable temperature equilibration time for each data point, so it takes just as much time to do just a couple of salts at a certain temperature as to do all of the salts. Also, if I am moving the probes about from oven to oven, those take a while to adjust to different temperature also, and they're a PAIN to get in and out of configuration with the ovens.

Thanks,
Miriam

-----Original Message-----

From: R Pabalan [mailto:rpabalan@cnwra.swri.edu]
Sent: Thursday, March 04, 2004 4:09 PM
To: 'Lietai Yang'; mjuckett@cnwra.swri.edu
Subject: RE: SOLCALC data

Miriam,

Attached is a Word file with two plots comparing your experimental data with values from Greenspan, the CNWRA 2002-03 report, and SOLCALC calculations. You can use the figures to help you decide which experiments to re-run.

bobby

-----Original Message-----

From: Lietai Yang [mailto:ltyang@cnwra.swri.edu]

Sent: Thursday, March 04, 2004 10:12 AM

To: mjuckett@cnwra.swri.edu; rpabalan@cnwra.swri.edu

Subject: RE: SOLCALC data

Miriam,

The most important criterion is to have water, visible amount of water, at the bottom of the salts (of cause the salt should not be a big pile). If this is met, I do not think there is a problem. You can do some measurements to verify this. I stressed the need to have very little of the water at the bottom because it is very easy and was often to have too much water in your tests when the temperature was high.

For the salts on the walls, we should minimize the amount, the best way we can. For example, by putting as little water as required at the testing temperature so that there will not be much evaporation.

The data you already got may not be invalid, but need to be selectively checked if you think there were too much dry salts on the walls.

In any case, the low temperature data should have no problem if you have used the right hydrates at the start.

Thanks

-lietai

-----Original Message-----

From: Miriam Juckett [mailto:mjuckett@cnwra.swri.edu]

Sent: Thursday, March 04, 2004 9:10 AM

To: 'Lietai Yang'; rpabalan@cnwra.swri.edu

Subject: RE: SOLCALC data

If that is the case, we definitely have a problem. From previous emails, you asked that there be a "little bit of water in the bottom of the flask." That's what I've been doing- and there has NOT been enough water to cover the solid. We had also discussed whether it mattered whether salt was on the sides of the flask and determined it didn't. As a result, all of the flasks have salts on the sides.

So, does this mean that all the results over the past few months are bunk? Where do I even begin to start over?

Bobby- I will check on the hydration phases in regent form. However, since we're allowing a good long equilibration time at each temperature, I think the hydration state would have time to adjust to temperature, and whatever waters of hydration were lost are either be evaporated off or become part of the solution and dissolve more salt.

-----Original Message-----

From: Lietai Yang [mailto:ltyang@cnwra.swri.edu]

Sent: Thursday, March 04, 2004 8:32 AM

To: mjuckett@cnwra.swri.edu;
rpabalan@cnwra.swri.edu

Subject: RE: SOLCALC data

Miriam,

I Agree with you. It is a good idea to redo the measurements. The ASTM standard calls for enough water to cover the solid. In another word, we should have enough visible solid, but completely covered by water. Also, the walls of the flask should not have solid (formed by spills during evaporation).

Thanks

-Lietai

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From: Roberto Pabalan

Created By: rpabalan@cnwra.swri.edu

Recipients:
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Tracking Status: None
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Reply Requested: Yes
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