From: **Christopher Tom** christopher.tom18@gmail.com
Subject: Re: Your website
Date: December 18, 2018 at 6:19 PM
To: Peter V. Schwartz pschwart@calpoly.edu
Cc: Anita Kelleher anita.kelleher2@gmail.com, kat lane katharinelane@gmail.com, Tyler Hentges thentges1@gmail.com

CT

Good Evening Dr. Schwartz + Team,

Hope that you're having a good break. Please see answers to your questions in red below.

It seems you've done a few of the things I asked, but didn't answer my main question - how much water is absorbed from opening the bag? This is a challenging question, my experience with high-barrier / MVTR testing is limited to single-use packages. To calculate this, my best guess is as follows: You would need to determine: Ambient RH / Temp, Food MV Absorption Rate vs. Desiccant Pouch MV Absorption Rate , Packaging Head Space (Empty volume within the package). Upon opening the bag, I would assume a full inlet of ambient air (taking up 100% volume of headspace). Using the absorption rate of the desiccant pouch, you could estimate the systems ability to mitigate moisture from the opening of the bag.

In short, I am interested to know if a low moisture barrier plastic is better than nothing (presumably what they're using now.). Our experiments would indicate that this low barrier plastic is way better than nothing because the food dried in the desiccant when the plastic bag was sealed, even when it was in the 100% RH chamber. This is what I've written now:

I understand that you have ruled out the high moisture barrier material because it is too expensive and has supply-side, dependency, and environmental concerns. However, what about the original work we did with cheap plastic? It's still way better than nothing, no Yes absolutely, any sort of polymer based packaging (with effective closure such as Ziploc style, roll over styles, heat sealed) will be far better than nothing. In order to determine the best packaging solution, I think it would be necessary to gain some more user information: How many times per day are these being opened? Is there a dispensing mechanism that would avoid opening the package completely? ? Additionally, what is the effect of opening the bag compared to having a low moisture barrier plastic?

The answer final question (in my mind would be): **Can the desiccant pouch should be able to absorb: moisture contained in headspace of package + moisture vapor that penetrates via the film? The desiccant pouch should be able to absorb this moisture at a faster rate than the food product, and be able to absorb the moisture between openings.**

I hope that this answers your questions, and can help point future work on this project in the right direction.

Best,
Chris

On Tue, Dec 18, 2018 at 5:25 AM Peter V. Schwartz <pschwart@calpoly.edu> wrote:

> Team Food Preservation,
>
> I'm finishing the websites, and I'm curious if you ever saw my feedback from Nov. 19:
>
> Nov. 19, From your presentation, the words were very small in problem statement. I encourage you to use very short bullet points. I liked that you know so much about the field, such as accelerated aging. Website looks good - I like the meet the team. Economy: better to put in GDP/cap (~$2000?). Calcium Chloride is CaCl2, no? How much moisture would penetrate a low barrier bag compared to how much would be absorbed in the time it takes to open up the bag to extract the day's food? i don't understand what is this unit: g-mil?In your stakeholder's analysis, you mention "women in the community." Have you communicated with anyone? Do you have a target community? Can you speak more about this? Website gets a "B" as is. Please answer my questions/concerns above and outline what your final design, with an "outlook" for an "A"
>
> It seems you've done a few of the things I asked, but didn't answer my main question - how much water is absorbed from opening the bag? In short, I am interested to know if a low moisture barrier plastic is better than nothing (presumably what they're using now.). Our experiments would indicate that this low barrier plastic is way better than nothing because the food dried in the desiccant when the plastic bag was sealed, even when it was in the 100% RH chamber. This is what I've written now:
>
> Dec. 8, B+/A-, You've done a good job. It seems you've addressed about half of my statements from Nov. 19. I understand that you have ruled out the high moisture barrier material because it is too expensive and has supply-side, dependency, and environmental concerns. However, what about the original work we did with cheap plastic? It's still way better than nothing, no? Additionally, what is the effect of opening the bag compared to having a low moisture barrier plastic?
>
> If you get time I'd appreciate a response - and consider it for the final grade. Mostly I'm curious about whether or not you saw the feedback, or if I'm missing something.

> Thanks
> Pete
>
> Pete Schwartz (he, him, his)
> Cal Poly Physics, Sustainability
> the new science building, 180-608
> 805-756-1220
> pschwart@calpoly.edu
>
> My Webpage
> My Resume
> My Classes using open source videos

--
Christopher Tom
925-323-5584