My name is Sally Mitchell, a high school chemistry teacher and current Albert Einstein Fellow at DOE's Office of Science. Ask me anything about kitchen chemistry hacks for Thanksgiving

AmerChemSocietyAMA [1] and r/Science AMAs[1]

[1]Affiliation not available

April 17, 2023

Abstract

Hi Reddit! I am a James Bryant Conant Award recipient in Teaching Chemistry and a nationally recognized leader in STEM education. I am certified to teach chemistry, biology, physics, general science, mathematics, college level forensics and general chemistry, but have a passion for food chemistry. I recently presented at the national conference of the American Chemical Society (ACS) on the Chemistry of Cooking: A look at Solution Chemistry. I am usually in Syracuse, New York—I have a bachelor's and master's degrees in chemistry and chemical education from Syracuse University. Right now, I am in Washington, D.C. at the Department of Energy's Office of Science on a year-long Albert Einstein Fellowship. I love food chemistry and cooking, so I'm excited to be here on the week of Thanksgiving. Ask me anything about kitchen and cooking chemistry tricks for Thanksgiving – especially for desserts, my favorite. Some stuff I love talking about: how to temper an egg for home-made chocolate crème pie, how to prevent your gravy from being too oily or too clumpy, when to use baking soda versus when to baking powder (it expires!), what can you use to substitute for ingredients you realize you're missing on Thanksgiving morning, how to speed up that turkey defrosting, how to tweak the recipe for a boxed cake mix to make a much better homemade cake just by using some kitchen hacks, the timing of making mashed potatoes, and more. But of course, I'm here for your questions, so ask away. I'll be back at Noon Tuesday ET (9 am PT, 5 pm UTC) to answer your questions! EDIT: I worked on many questions tonight but there are so many more coming in as I type. I will continue answering questions tomorrow and hopefully you will get responses from me or other redditors.

the WINNOWER

REDDIT

Science AMA Series: my name is Sally Mitchell, a high school chemistry teacher and current Albert Einstein Fellow at DOE's Office of Science. Ask me anything about kitchen chemistry hacks for Thanksgiv

AMERCHEMSOCIETYAMA R/SCIENCE

ABSTRACT

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READ REVIEWS

WRITE A REVIEW

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DOI:
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I know the difference between baking soda and baking powder, but how is it decided when a recipe requires both? Would it make my brownies lighter if I added baking soda to their recipe that only calls for powder?

MrFurrypants

Baking powder is my passion. Most don't know the difference between baking powder and baking soda. As a matter of fact, this is an activity I do in my chemistry class. After experimentation, my students should be able to tell me that baking soda is a pure substance and baking powder is a mixture. Baking powder will bubble when water is added (if your baking powder does not bubble when you add water, check the expiration date) and baking soda will not bubble with the addition of water, but will when the baking soda-water mixture is heated up. Baking powder in water is neutral and baking soda in water is slightly basic. Both baking powder and baking soda will bubble when vinegar is added.

Albert Einstein Fellow at DOE's Office of Science. Ask me anything about kitchen chemistry hacks for Thanksgiv, *The Winnower* 2:e144836.66790 , 2015 , DOI: 10.15200/winn.144836.66790

After this initial investigative activity, the application of the difference is then introduced and now I come to answer your question. Baking soda is used when ingredients are acidic. When a carbonate (baking soda is sodium hydrogen carbonate) mixes with an acid (vinegar, lemon juice, chocolate, brown sugar are just some examples of acidic foods) a chemical reaction takes place and carbon dioxide is released. This along with steam generated in the baking process will help leaven your brownies. But for an added lift, baking powder is also added. Baking powder usually contains an acid salt that neutralizes the baking soda found in the baking powder mixture and more carbon dioxide bubbles are released.

There are many different types of baking powders out there, some are slow-acting double acting and others are fast-acting double acting. This means you should really pick the correct baking powder for the proper use instead of using what is on the shelf. You can make your own single acting baking powder by mixing together baking soda and cream of tartar, but if you use this method, be prepared and mix quickly and bake immediately. But more on this tonight when I have more time tonight.

How much does a deep understanding of food chemistry influence how you cook? Can you make up recipes on the fly, or is there still an amount of trial and error to get things just right?

timhba

I thinking cooking is a balance between art and chemistry. Baking is a little trickier on the chemistry end and I use my art more for presentation. I treat cooking and baking like a scientific experiment. If something doesn't turn out right, I try to think through the whole process, then go back and try something new.

When you are doing an experiment, there should only be one independent variable in the experiment. For example, suppose I make a cake and I don't like the texture, I could change one variable such as the type of baking powder I used, but make the cake again using the exact same method and ingredients (except for the different type of baking powder.) Now I can compare the two different textures.

I know that after I studied organic chemistry, I really understood what cooking and baking did to the chemicals found in food and I became a better cook and baker.

I do make up recipes on the fly because I am not afraid to experiment. If the recipe flops, I just don't serve it to anyone, and I start all over again. Persistence is the key.

What is going on at different baking temperatures? What is the general rule of thumb that drives a cooking temperature in a baking recipe. Why are some things cooked at 300F while others are at 450F?

AaronStack91

Different baking temperatures causes different chemical reactions to occur. Let me focus on caramelization of sucrose (common table sugar). At 170 degrees Celsius (340 degrees Fahrenheit) the sucrose molecule will start to break apart. As the process proceeds, hundreds of new and different compounds form giving sour and bitter flavors, and browning occurs. The sweetness goes down while the darker and more bitter the food gets. This is why sometimes I bake my cookies at a lower temperature to prevent caramelization and sometimes I bake them at a higher temperature. It depends on the final flavor I am trying to create.

Someone already mentioned the Maillard Reaction in comments above and did a nice job explaining it. This is one of my favorite chemical reactions and many of my students have done research on the

Maillard reaction in regard to its effect on flavor and nutrition. The higher the temperature, the faster the reaction and browning. This is why when I make vanilla custard or a white chocolate fudge, I lower the temperature and cook it slowly, preventing the browning all together.

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AaronStack91

Great comments on this post already.

Why do sous vide eggs turn out so different from boiled eggs? What's happening in the yolk?

_PM_ME_YOUR_NIPPLES

Eggs cooked slowly are not really sous vide eggs but when you cook an egg, at specific temperatures for a specific amount of time, wonderful things can happen.

Eggs can be pasteurized in their shells without really cooking them. Now you can have raw eggs, safe to use in recipes for mayo or Caesar salad dressing, without the worry of foodborne illness.

Eggs contain different kinds of proteins and each has its own setting point temperature. By controlling the temperature, you can set the proteins gently and cook them all the way through without the harsh temperatures you cannot control from directly cooking on the stove top.

100 degrees Celsius is the normal boiling point of water and if your eggs in the shell are allowed to come to equilibrium with this water temperature the proteins become tough. I prefer to hard cook my eggs using water that is not boiling with the aid of an egg-perfect egg timer. This little device can be purchased at most grocery stores and it tells you when the egg is done, no matter the temperature of the water. It is about the same size of a large egg and it has the same heat capacity of an egg. When the color changes from red to black, you know when your hard cooked egg is done.

A great website is: http://www.seriouseats.com/2013/10/sous-vide-101-all-about-eggs.html that shows pictures and explains it all.

Too much salt added... how can this be fixed?

donuthorse

Table salt, or sodium chloride (NaCl) is an essential nutrient for our bodies to function properly, but it is also an important flavoring. Three common salts used in foods are sodium chloride, potassium chloride, and magnesium sulfate. I will focus on sodium chloride for this question and hope to get back to the others salts later today when I have more time.

-Salty is one of the five main tastes recognized by the brain. If you were to take a food that is hot such as soup and salt it to taste and then cool it down, it would taste too salty. So cold enhances salty and hot reduces the sensation of saltiness. Keep that in mind when you salt food for others. At what temperature will they be eating the food, such as leftovers?

-Salt is a taste modifier. It suppresses the sensation of bitterness and is used with alcoholic drinks such as a margarita to reduce the bitterness of the drink. Salt is also a taste enhancer, most recipes need salt to taste correctly.

-Too much salt in your cookies is hard to overcome, tastewise - you should try to shape them into objects with cookie cutters and use them for your decorations since the additional salt will help deter bacterial growth.

Syracuse, NY is known as the "Salt-City" and is located in the town of Salina (think of the word Saline and what it means). Onondaga Lake was a salt lake and the salt marshes surrounding Syracuse were the basis for commercial salt production. Salt was an important preservative before the invention of electricity and refrigeration and the Erie Canal was central to the distribution of salt to the rest of the state. I will come back tonight and explain how some foods are salted to preserve and then how the salt is removed so that you can eat the food without it being too salty.

My favorite Syracuse food is "salt-potatoes", small little bite-size, white potatoes. They come uncooked in a bag accompanied with a small bag of salt and this will give you a concentration of 1 part salt to 6 parts water when boiled per directions. I boil them until they are soft and a salty crust appears on the skin. They will never waterlog due to the amount of salt in the water so you can cook them until the insides become very creamy. I then put lots of butter on top and let the butter melt. I found a grocery store down here in Columbia, MD that sells bags of "salt potatoes", these potatoes are just the right size and texture, so this is what I am making for Thanksgiving instead of mashed potatoes.

Many people have already commented on this question and there are a great number of suggestions. I think that dilution is a great solution and addition of other foods to allow diffusion of the salt into them is a great idea, but sometimes, you really can't fix the too much saltiness in a soup and you may have to throw it away and start over.

Hey Mrs. Mitchell, I was in your chemistry class in high school! I just wanted to say it was one of my favorite classes (even though I don't use it in my career at all). I'm so proud of you and your achievements, I knew that you would do great things. You have a great combination of knowledge and passion...and I still remember how you taught us how to get oil out of clothes. Mind sharing that with the group here today?

Fun story I thought you might appreciate: in college (about 2 - 3 years after your class) I took a self-study chemistry course with no lecture and just in-person proctored exams. I accidentally purchased

the wrong textbook so most of the tested material had not been in my reading (for most of the quarter I just thought the professor was losing it). But since you were **such a memorable teacher**, I ended up with a 98% in the class. So thank you for the college credit.

GirlsLikeStatus

Thank you for the kind words. Follow me on twitter and catch up with me @sallybchemistry and congratulations on your successs.

How *do* you tweak a boxed cake recipe?

And mashed potatoes need timing? Eh? Please teach me about this timing.

Thanks for doing this AMA and for suggesting topics. You've intrigued me - I hope people ask about all of your topics.

iguessimme

There is another post similar to this so I will answer it here but also copy and paste it on a later post. My secret for making a boxed cake recipe is to make sure the eggs are at room temperature. I measure out the ingredients according to the package, but I change the way I add the ingredients. I add the mix, water, and oil (or butter) together. Stir for 30 seconds on a slow speed with your mixer just to get the flour wet. Once the flour is wet, you can beat it on high for 2 minutes. Then I add each egg, one at a time beating 30 seconds in between each addition and scraping the sides with a spatula each time. I pour the mix immediately in a greased, then lined with parchment paper, then greased again and floured pan (size according to the directions) and bake it immediately. This tastes so much better than adding all the ingredients at once.

Another variation is to separate the eggs. Follow the above directions but add only the egg yolks one at a time... Then take your egg whites and beat them with a whisk until they form soft peaks. Fold them into the cake mixture and continue with the instructions above. So good!!!!

My gravy always turns out horribly. Once and for all, what is THE best way to make gravy?

Edit: Thanks so much for all of the tips and recipes already. I greatly appreciate all of your help!

ki10_butt

I think you are probably talking about lumpy gravy. My inspiration to becoming a good cook was my mother, because she made the "worst" gravy each year. I learned how to work with flour and thickening agents because of her gravy mistakes, and now I make perfect gravy every time. I recommend the roux (someone already mentioned this) and this is how I like to make my gravy, but you can always use the correct flour (gravy flour, you can buy this at the grocery store under several brand names) and always shake the flour in COLD water before adding to the hot drippings.

Can you recommend any courses or books that deal specifically with cooking-related chemistry? Might sound funny but I was fascinated when House took up cooking and would rattle on about the chemistry involved.

Thanks!

v8jet

The first book that I purchased on food chemistry was back in 1984 called "On Food and Cooking" by Harold McGee. He updated the book in 2004 making it an easier read. I used this book to create my "Chemistry Of Cooking" club at the North Carolina School of Science and Mathematics and this started my passion with food chemistry.

In 1997, Shirley Corriher wrote a book called "Cookwise" and this made it a bit easier to understand the chemistry behind cooking and also explained recipes fully with the why she does something to a recipe and the result because of this change. A great example is her explanation about making a gravy and the difference between all of the different starches out there.

These two books helped me incorporate food chemistry into my chemistry class and food safe laboratory. I was able to bring practical chemistry into the lives of most of my students through these two books.

Hi, thanks for this AMA, here are some of my questions : What is your fastest cookie recipe ? What is your best cookie recipe ? What is your most chemically awesome cookie recipe ? What is your favorite desert ?

jedidreyfus

1. Fastest cookie recipe? Not sure what you mean about fastest. Fastest baking? Something thin like cut out sugar cookies.

2. Best cookie recipe would have to be my Grandma Button's Molasses Cookie recipe. It was always on the back of the yellow capped Grandma's Molasses jar, but they don't publish it anymore. I changed it slightly, and I bake using a metric balance. This way, I use mass to measure out ingredients directly in the bowl without the use of measuring cups. I do use metric measuring spoons for the baking soda, salt, and spices. No clean up involved with the molasses going directly into the bowl. Try it sometime, it is the way to bake. Here is the recipe:

GRANDMA BUTTON'S FAVORITE MOLASSES COOKIE RECIPE Reactants needed: ***Note*** All reactants should be at room temperature during the following procedure. Do not double this recipe. (Trust Grandma Button)

- 135 grams shortening (3/4 cup) or 165 grams softened butter (1 ½ sticks)
- 266 grams light brown sugar
- 82 grams unsulphured molasses
- 1 large egg at room temperature
- 320 grams of all purpose flour
- 10 mL baking soda (2 teaspoons)
- 2.5 mL table salt (1/2 teaspoon)
- 5mL ground ginger (1 teaspoon)
- 10 mL ground cinnamon (2 teaspoons)
- 1.25 mL ground clove (1/4 teaspoon) -100 grams sucrose (table sugar) this is used for rolling the cookie balls

PROCEDURE: PREHEAT OVEN TO 177 °C (350 °F)

1.To a 2-liter bowl, add the shortening (or butter) together with the light brown sugar. Mix until a homogeneous mixture is obtained.

1. Now add molasses. Stir until well-blended.
2. Add egg and stir until blended.
3. In a separate 1-liter bowl, sift together the flour, baking soda, table salt, ginger, cinnamon, and ground clove.
4. Add the dry reactants from the 1-liter bowl to the wet reactants in the 2-liter bowl. Slowly stir until well-blended.
5. Form 24.00 gram balls of mixture. Roll in a bowl containing 100 grams sucrose until each ball is well coated with sucrose.
6. Place 12 balls on cookie sheet lined with parchment paper and bake in the preheated oven. (You should have about 36 balls total.)
7. Place the cookie sheets in the oven and bake for 10-14 minutes until done.
8. Carefully remove from oven using a hot mitt. Place on a heat protected surface and allow to come to room temperature (25°C.)
9. Ingest, digest, and egest, but most of all: ENJOY!
10. Awesome cookie recipe? I make a peanut butter cookie bake it as a cookie ball and when it comes out of the oven, I push it down in the center like a thumbprint cookie. I then make my perfect chocolate fudge and I pour fudge into each thumbprint and let the fudge set. Delicious.
11. Favorite dessert? To be honest, gala apple slice with a slice of extra sharp cheddar cheese.

How *do* I speed up the defrost of a turkey?

rackik

First of all, if you can buy a fresh turkey, you won't need to defrost it. If you have a frozen turkey, you need to get going on it right now to make sure it is completely thawed before baking it on Thursday. Someone mentioned: Give it a bath. I would read the label on the wrapping and follow it. If you need to speed this up, a cold-water bath with running water in it defrosts the fastest. Moving water will defrost faster than standing water.

Mrs. Mitchell!

You were my chemistry teacher in high school! You made chemistry fun.

I still remember making fudge and cheese in your class. And my favorite was when I saw water super-cool in to ice entirely by accident. You making science fun is a big part of the reason science is so fascinating to me today!

So, I want to thank you for that.

As for my question: There are some well-known food scientists out there. Do you have a favorite? And have you been personally inspired by any of them, or did you find your inspiration elsewhere? If it was one of them, please tell us about him/her and why they inspired you and if not, then where did you get your inspiration and interest from?

cscottaxp

Well "hi" to my former student. Keep in touch and send me a note on twitter @sallybchemistry

My favorite food scientists are Harold McGee and Gavin Sacks. I bought Harold's book "On Food and Cooking" back in 1984 when it first came out and I was hooked on food science. I had just began my teaching career and I used the book in my Chemistry of Cooking club afterschool. We made breads, pastas, cheeses, egg dishes and much more. In 1999, I flew out to San Francisco and had lunch with Harold. What a great guy, and much younger than I had imagined. Harold was a speaker of mine in Boston at the American Chemical Society meeting for the High School Chemistry Teacher Day and he was such a hit with the chemistry teacher. He doesn't know this yet, but he will be my speaker again but this time it will be in San Francisco in 2017.

Gavin Sacks is an associate professor in the Department of Food Science at Cornell University. His research and teaching interests are in understanding the enological and viticultural parameters that shape wine flavor from vine to bottle. He was my speaker at our local section American Chemical Society meeting in Syracuse 8 years ago where the dinner was the meeting. Everybody got their meal with lots of different fruits, spices, meats, vegetables and wines and then Gavin started his talk by pairing foods together and everyone tasted different foods with different wines and learned about taste and flavor throughout the meal And then there was dessert. Wine and chocolate go hand in hand. Gavin has been my science coach for the past 2 years with a program through the American Chemical Society. He has worked with me as my mentor to develop some really neat, new food science experiments to do with my students. He helped me put together a webinar on Hacking Your Taste Buds last week to celebrate 10 years of the ACS ChemClubs.

My green bean casserole calls for heavy cream, and I could only find heavy whipping cream or whipping cream. Which is the best substitution?

safetysquirrel

Well, first of all, be careful when you buy cream. They sell something called "fat-free" cream. What is the point of this? Isn't the point to have the rich fat in this dish? The fat-free cream is not cream at all, it is fat free milk with a bunch of thickeners in it to appear to be like cream. I would avoid this unless you are cutting fat out of your diet and still want to make this dish.

Light creams are poured in coffee or on your strawberries and do not contain enough fat globules to stabilize a whipped foam. Heavy creams can be whipped or used to thicken sauces.

The difference between all the different types of creams is the percentage of butterfat. Half and half contains 10-18 % butterfat, light coffee cream contains 18-30 % butterfat, light whipping cream contains 30-36 % butterfat, and heavy cream contains at least 36% butterfat. To whip cream, it must contain at least 30% butterfat. The more the butterfat, the faster the cream will whip and the firmer it will be. (If you over whip your cream, it turns into butter and butter milk)

For your recipe, you are not whipping it, so it really doesn't matter which one you use.

How long can leftover turkey be in the fridge before it's no longer safe to eat? What are some ways to make it last longer?

ZarihS

Some great suggestions already, but remember to always heat up food to at least 55 -60 degrees Celsius (140 degrees Fahrenheit) to make sure bacteria that can cause foodborne illness is eliminated. They recommend eating leftovers within 4 days if stored properly. Great tips on Foodsafety.gov http://www.foodsafety.gov/keep/basics/cook/

is "turkey sleepiness/drowsiness" really caused by:

a) tryptophan

b) lazyness

c) other causes

Also is this a problem that we really want to solve?

marsinvader

There is a great answer to this in a video made by the American Chemical https://www.youtube.com/watch?v=5Fo5a_FOCKY Watch this and learn, then you can tell me the answer.

Given that oven space is such a premium, what dishes are suitable (or perhaps even better) via a slowcooker or other non-oven appliances?

tigs84

I love my turkey roaster oven, the kind you plug into the wall. This leaves my oven open and free to bake everything else. My grandmother used to have 2 of them and there was never a problem heating up everything and keeping all of the food hot.

To me, cranberries are way too bitter. I can't stand them as sauce, sorbet, or juice, no matter how much sugar is added. I've noticed that many recipes call for combining them with an acid (orange juice or lemon juice) to kill the bitterness--supposedly via an acid/base reaction. Is there any truth in this? Taste-wise, it doesn't work for me, but I've always idly wondered whether the chemistry holds up.

neurobeegirl

I have always found cranberries to be sour, not really bitter. I will have to look into this.

From 2000-2004 I was in HS and had one of the best teachers for chemistry in the world. He inspired me to get a science degree and learned so much from him. However, after I graduated, he quit out school and went to a richer neighborhood. He actually wanted to teach in our school, but quite honestly, he was a bit of a 'typical nerd pushover' and I think he finally snapped. I was on the bystander effect and did nothing, but am kind of sad that the students in my neighborhood no longer have such an awesome teacher to inspire them.
Sorry if this sounds so off topic, but my question is from a student's point of view:
Is there anything we could do to support teachers we like? Petitions, or something we could do in the classroom?
Oh, and a food question... ever made anyone sick?

uReallyShouldTrustMe

To support teachers schools need to provide teachers with the tools to be successful. Money for supplies and equipment should be provided and time for professional development should be in the school plan. As a science teacher, I have to use every summer to take classes to keep up with the changing world. Material sciences has exploded and I am preparing my students for jobs and careers

that haven't even been invented yet. I need to keep up with the technology and the changes in nanotechnology, computer science, nuclear chemistry, etc... Support teachers with mentors their first 5 years.

To answer your question: every made anyone sick? I hope not, I am careful not to cross contaminant any food surfaces when cooking, I always use a cooking thermometer to make sure internal temperatures are sufficient to kill most bacteria, I always try things before I serve them to others. If they taste funny, it may mean something. If it smells funny, don't eat it. And if my dog won't eat it, it is probably bad. Check your expiration dates.

My niece that it is 8 years old want to study chemistry and loves cooking and mixed a lot of things in the kitchen. I don't know anything about chemistry. How can I help her? Is there any site that you would recommend for little kids. I would hate that she loose interest.

cayerdis

I think you should do what I did with my 3 nieces, I gave them my time. I would cook and bake with them, I bought them cake decorating kits and pans and spatulas and all the equipment needed to cook for their birthday presents.
I would buy her the book called Cookwise by Shirley Corriher and the Bread Bible by Rose Levy Beranbaum. Start cooking and learning the chemistry behind foods. I will continue to look for good sites for you.

Shoutout to ESM high school! You're awesome Mrs. Mitchell!

Philyeagles710

Thank you for the shoutout. I miss my students this year, but I am having a great time in Washington, DC this year.

Since you're obviously a master of the art of cooking - I'm wondering your thoughts on STEAM education vs. STEM education.

eggbomb

Funny you should ask this question. What is the definition of STEM anyway? Most would say Science, Technology, Engineering, and Mathematics, but what does this acronym really mean? I like what the State of Idaho has done and created an organization called i-STEM. They define STEM Education as: " a new movement in American Education to help teachers and their students understand how the academic disciplines of Science, Technology, Engineering and Mathematics impact their world and prepare them for the workforce of tomorrow. STEM is multidiscipline based, incorporating the integration of other disciplinary knowledge into a new whole. Technology helps us communicate; Math is the language; Science and Engineering are the processes for thinking; all this leads to Innovation."

Of course, all subjects are important, but I think the focus on STEM subjects are important because of technology advances and what we need to do in order to prepare the future workforce to fill these positions. Art will always be part of every subject as will English and social studies, and business, and health and the list goes on and on. All subjects are important, but a STEM Education is more project and problem based learning with an integration of all skills in every subject area.

Howdy Sally!

First, let me say thank you for doing this AMA. It is prolly going to end up saving a lot of Thanksgiving meals this season.

My question for you is regarding stuffing (dressing). Do you have any recommendations on how to produce a crusty but still moist stuffing? I don't want it to be too pudding-like but it has to have that signature texture. Last year I did it with cubed baguette and the normal vegetables, but it ended up being a bit too loose/crusty.

Thanks again! Happy Holidays

freshproduce

The secret to a good stuffing is to make sure the bread is dried before adding the butter and water. If you used a cubed baguette, you need to dry out the bread over night by leaving it out exposed to the air or dry it slowly by placing the cubes in a warm oven until they are dried out before mixing in the other ingredients.

Ever thought of being on the American Test Kitchen show?

ttmh777

Not really, I would rather have my own show. I am more about the chemistry behind cooking and baking and not really about the recipe itself.

I just recently did my exams at uni for Phys and Chem. I failed both. It wasn't much of a surprise to be entirely honest as at the beginning of semester two I hit an incredibly rough spot - read: family troubles lead into depression.

I'm planning on reapplying for the program I just failed. My question for you is do you have any tips/tricks towards making Chemistry (and Physics if you have them!) easier to study and/or understand?

Best regards, Stoicae.

Stoicae

I would also add to the comment below: don't just memorize facts. Try to learn by meaning and understanding. Here is an example: Sodium's element symbol is Na. Do you see and N or an A in the name? Do you ask yourself: why Na? If not, you should. Investigate if the instructor doesn't help you understand this. Sodium is what we call element 11 in the USA but Na is from the Latin word Natrium. Do you see now why the symbol is Na? And don't say na.....