ACS Chemistry AMA: I'm Adam Dylewski, I've been producing science videos for Youtube for the past 10 years, Ask Me Anything!

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

[1]Affiliation not available

April 17, 2023

Abstract

Hi Reddit! I'm the creator of the American Chemical Society's Reactions YouTube channel, a weekly series that highlights the chemistry in everyday life. I also manage ACS Productions, the Society's award-winning video team. I received undergraduate degrees in Genetics and Science Communication from the University of Wisconsin-Madison, and an MBA from George Mason University. I've been producing science videos on YouTube for most of the site's 10-year history. Bill Nye has said that "if you want to teach something, you have to entertain people... Mr. Wizard encouraged a generation of scientists and engineers by doing this." This entertaining, educational approach is at the heart of Reactions. We've produced videos explaining why dogs smell each other's butts, why a pinch of salt can make bad coffee taste better and how garbage kickstarted the modern chemical industry, as well as episodes on the chemistry of hangovers, tattoos, avocados, bacon, moisturizer and, yes, cats. The series (and its predecessor, Bytesize Science) has received more than 20 million views and grown to 250,000 combined followers on YouTube and Facebook. Reactions episodes have been featured on the Today Show, NPR, Washington Post and more than 100 other media outlets. The series has collaborated with noted science communicators and YouTubers, including Joe Hanson (It's OK to be Smart), Deborah Blum (The Poisoner's Handbook), Raychelle Burks (@DrRubidium), Andy Brunning (Compound Interest), Vanessa Hill (BrainCraft) and Rachel Feltman (Washington Post's Speaking of Science blog), among others. In 2015, Wired featured Reactions in its list of "Science Blogs, Twitter Feeds and Channels We Love." I'm excited to do this AMA about communicating chemistry on YouTube. Feel free to ask me anything about the making of Reactions, how science videos can reach the public, using social media for science communication and questions about video production and YouTube, in general. I'll be back at 11 am EST (8 am PST, 4 pm UTC) to answer your questions, ask me anything! [Edit at 11:45am EST:] Thanks for all the great questions! Had some technical issues, but I'm now up and running and replying the qs below. [Edit at 12:45pm EST] OK I tried to respond to as many of these as I could. I'll pop back online later this afternoon to answer a few more. [Edit 10:30pm EST] Responded to a few more. Thanks for all the great questions – this was fun! And if you haven't already, head over to Reactions and subscribe: https://www.youtube.com/user/ACSReactions

the WINNOWER

REDDIT

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AMERCHEMSOCIETYAMA R/SCIENCE

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READ REVIEWS

WRITE A REVIEW

CORRESPONDENCE:

DATE RECEIVED:
January 20, 2016

DOI:
10.15200/winn.145320.06422

ARCHIVED:

Hi. My 10 yr old son has had a fascination with Chemisty for a few years now. He wants to be a Chem Professor when he gets older. He even bought, at a school book fair, I believe it's Greys book on the elements. He still reads it all the time. He is advanced in reading and math.
What can I go to help him reach his goals? Any books or direction I can give him? Thanks

seathian

Theo's books (and app) are a fantastic gateway to chemistry. Here are some other books, apps and YouTube channels that come to mind:

January 19, 2016

CITATION: AmerChemSocietyAMA , r/Science , ACS Chemistry AMA: I'm Adam Dylewski, I've been producing science videos for Youtube for the past 10 years, Ask Me Anything!, *The Winnower* 3:e145320.06422 , 2016 , DOI: 10.15200/winn.145320.06422

-Periodic Videos (Prof. Poliakoff is the ultimate chemistry prof)

-The Disappearing Spoon by Sam Kean (fascinating stories about the elements)

-ChemCrafter (cool app based on the classic Gilbert chemistry sets of the 20th century)

-CrashCourse Chemistry: https://www.youtube.com/watch?v=FSyAehMdpyI&index=1&list=PL8dPuuaLjXtPHzzYuWy6fYEaX9mQQ8oGr

Once he gets to high school, he should definitely join an ACS ChemClub to find other like minded chemistry fans. If there isn't a ChemClub at this school, he should start one! Details here: http://www.acs.org/content/acs/en/education/students/highschool/chemistryclubs.html

I also agree with @snydermedic -- you should definitely reach out to the chemistry grad program at U of Minnesota. I'm sure they'd be happy to take your son on a tour of some of their labs.

So happy to have you here with us today! Can you tell us some "lessons learned" during your process? What was a mistake that you made that made you miss your target audience, and/or what was successful beyond your expectation?

On /r/science, much of our outreach happens through text based platforms and direct communication with investigators. I'm curious what have you learned about outreach through audio and visual media (ie are you reaching the same audience of people interested in science but holding their attention/providing better learning experiences, or are you communicating with a different demographic entirely when you change media?).

p1percub

A few lessons learned over the years:

- Make chemistry part of the conversation. With Reactions, we work to find topics that people are talking about, and then highlight the chemistry behind those topics. We recently made a video highlighting some of the chemistry behind life in a vault, timed for release right before Fallout 4 came out. Fallout was a great hook to launch a conversation on high-tech materials, radiation and even the nitrogen cycle. We're always looking for other hooks like this to grab viewers who might not ordinarily watch a video about chemistry.
- Like that Bill Nye quote I mentioned at the top of the AMA, if you want to educate people through video, you have to entertain them. The moment we started doing both, our videos began to take off.
- Based on our analytics, here are the chemistry topics that most resonate with viewers:
    - Food chemistry
    - "Weird science" — i.e. is it OK to pee in the ocean/pool?
    - Videos that explain the chemistry of the stuff they love (examples: our episodes on the chemistry of the iPhone, slasher films, cats, etc.
    - Videos that debunk common chemistry misconceptions ("microwaving is bad for food," etc.)

Hey Adam! Current food science undergrad here, who truly appreciates your explanation of MSG. How do you handle everyday scientific illiteracy? Everyone has those people on their Facebook timeline. I would love to sit down and be able to make videos to explain the controversial food issues to my family and friends that so grossly misunderstand them, and often will direct them to that kind of content, but sometimes those resources, or the time to make them doesn't exist. Thanks! Keep up the work, it really means a lot to someone who works in the industry.

AlaskaHolden

Great question. We take special care with our episodes on MSG or other controversial food topics. It's important that we don't just preach to the choir of science fans. In an effort to reach outside of that group, we look at the questions and concerns that people have about controversial topics, and address those head on by presenting the scientific consensus based on the literature. I also think that Reactions' funny, relatable style makes some of these subjects more approachable.

Really glad you like the videos! Thanks for watching.

What are your preferred tools for editing your videos? Have they changed over the years? How much time does it take?

nallen

We primarily use Final Cut 7 (we're stubborn and don't like FCPX) but are gradually moving over to Adobe Premiere for video editing. All the animations in Reactions are done with After Effects and Photoshop. These have been our go-to tools for a while, but our process has changed quite a bit over the years.

Reactions used to be called Bytesize Science (we relaunched the series in January 2014). Our original episodes involved a lot of original animation — either hand-drawn and then scanned into a computer or original 3D animation. While we love both of those styles, they were too time-consuming to produce on a regular basis.

Over time, we developed an approach the team jokingly calls "Frankenstock." Since Reactions is a weekly show, we don't have time to create everything from scratch, so we like to combine scientific images (ex: molecules) with goofy stock images/graphics to create a fun, collage-like style. It took a lot of trial and error to get to this point, and we're constantly tweaking our approach.

Hi,

I am a big fan of your videos.

You guys inspired me to maybe try doing some videos on youtube about the chemistry of cooking. I'm currently reading about the science of cooking and my background in biology from medicine really helps! However, I still find there are some unexplained things I cannot really understand, or I sometimes find the chemistry behind, say a pizza, overwhelming.

So, my question to you is:

How would you recommand one should approach learning about the chemistry of cooking? Do you know any favorite books you would recommand?

I'm currently reading Harold McGee's book *On Food and Cooking*, which helps a little!

To be sure I explained myself clearly, I'm trying to start a youtube channel and I thought explaining the chemistry of pizza would be a good start.

Thank you,

Hopopa.

hopopa

Thanks! The best thing to do is to find a researcher who has published articles on a subject like, say, pizza used in cheese (there are LOTS of papers on this). Send them a friendly email with your questions, and tell them you're working on a video. For cheese chemistry, you can't go wrong with Wisconsin's Center for Dairy Research (the cheese motherland) -- we've worked with their scientists before. You'll be surprised how generous some of these researchers are with their time. Also, reaching out to a professor of food science at your local university would be a great place to start.

Hal McGee's book is terrific. Here are some other cooking/baking chemistry books and posts to check out:

-Cookwise and/or Bakewise by Shirley Corriher

-The Kitchen as a Laboratory by Cesar Vega

-Cooking for Geeks by Jeff Potter

As a post-graduate studying for the MCAT, I have long since forgotten what the experiments of General, Organic, and Biochemistry look like. As an undergrad, *doing* the experiments and seeing the lecture come to life was extremely helpful; however, now all I can do is look at diagrams & formulas of past experiments in my books.

Are there any plans to use your channel not only for "fun science" videos but also for free GenChem/Organic/Biochem experiments that an undergrad would see?

There are plenty of resources for someone with an internet connection to see lectures about serious material but very few videos showing the same experiments and showing you the process of making predictions, calculations, & conclusions based on chemical experiments.

I think this is a huge part missing from online science curricula, and it would be incredibly helpful for fledgling scientists around the world to have access to real experiments.

MisterE_MD

We're considering doing short demos, experiments and animations explaining chemistry fundamentals taught in intro chem/ochem/biochem courses -- will keep this in mind!

Who is funding these experiments, as well as providing the materials?

Often wholesalers won't sell to individuals outside of industry and academia. Are you working with a local company or school to film with them or have your own studio?

Lastly, what efforts do you take to make sure the layman is safe when exploring other chemical resourced and educating themselves about safety and other potential hazards?

neuromorph

Reactions is funded by the ACS, and is written and produced in-house by ACS Productions, the Society's (awesome) video team. We have a video studio here at ACS headquarters in Washington, DC.

Reactions' focus on everyday chemistry topics means that we rarely feature experiments that include hazardous compounds. With that said, we emphasize chemical safety at all times when we film in labs or feature chemistry demos of any kind. For example, we require all researchers we film in the lab to wear protective eyewear at all times — no exceptions. We also recently worked on a video

demonstrating a safer way to do the “rainbow flame” experiment, which has caused a number of serious injuries in the last few years: https://www.youtube.com/watch?v=kkBFG1mTSBk. You can find a lot more materials via ACS’ committee on chemical safety: http://www.acs.org/content/acs/en/about/governance/committees/chemicalsafety.html

What is your opinion on popular Facebook pages stealing content from channels, putting their watermark on it, and getting triple the amount of views the original video has?

piefordays

Freebooting — ie reposting content stolen from YouTube channels — is a huge problem for creators. With Reactions, we’re fortunate to have the support of the ACS, so YouTube ad revenue is not critical to make our channel sustainable (though it certainly helps). That’s not the case for other creators who rely on this revenue to make their videos. In A Nutshell recently put out an important video on this subject — check it out here: https://www.youtube.com/watch?v=t7tA3NNKF0Q

I wanted to do something like this, but for a different topic. Any advice on how to get started in making educational videos on YouTube?

spiral_cloud

Pick a topic that you're passionate about, and start putting videos out there and see what works. YouTube is now best played as a team sport -- if you have a friend you can collaborate with to help with writing/filming/editing/animation/etc., you can get really far. Though its difficult to break through on YouTube, picking a niche topic that YOU love (rather than aiming for mass appeal) is a great way to build a devoted audience.

What are your favorite science channels on YouTube?

aleksi666

On the science side, my personal favorites are In A Nutshell, Healthcare Triage (fantastic show about medicine), Veritasium, SciShow, The Brain Scoop, Periodic Videos, It’s OK to Be Smart, BrainCraft, ASAPScience, Gross Science and SkunkBear (NPR’s amazing and underrated science YouTube channel).

Some non-science channels I love: Casey Neistat, the School of Life (everyday philosophy channel — highly recommended), Vox and Wired’s YouTube channel.

In your opinion, what is the most fascinating yet relatively unknown science fact that you feel everyone should know?

radioactivecowz

My favorite: a tiny pinch of salt will make burnt, nasty coffee taste better (table salt ie sodium chloride has an amazing ability to suppress bitterness). It's a great example of how understanding a bit of chemistry can improve your life. This tip was also the inspiration behind our popular chemistry life hacks episodes: https://www.youtube.com/watch?v=mAqJmEjCy4E

What's your favorite element and why?

Jpace2735

Bismuth. Love those crazy square crystals: http://www.periodictable.com/Samples/083.20/s13.JPG

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Do you watch other chemistry YouTube channels? I work on Bunsen Burns where we actually film chemical reactions sort of Breaking Bad-esque. A few others of course being Nurdrage, Nilered, and Chemplayer. Just curious! Love the channel!

LifeisElemental

We're huge fans of Periodic Videos, and love chemistry demo channels like ThoiSoi2 and Nighthawkinlight. We actually worked on a video with Hybrid Librarian, explaining the underlying chemistry behind some spectacular reactions: https://www.youtube.com/watch?v=0Bt6RPP2ANI (features some great footage from some of the above channels, including Nilered)

Will definitely check out Bunsen Burns and some of these other channels!

Have you considered doing collaborations with other science YouTube channels?

StormCrow1770

We love collaborating with other science YouTube channels -- so far, we've done collabs with Hybrid Librarian, It's OK to Be Smart and Braincraft (we have a good one coming up with the excellent Gross Science channel).

Beyond YouTubers, we also like to collaborate with science communicators like Deborah Blum, Sam Kean, Raychelle Burks (@drrubidium), Bethany Brookshire (@Scicurious) and Rachel Feltman (who runs WaPo's excellent Speaking of Science blog).

How do you feel about the types of educational videos you and others make replacing, rather than supplementing, traditional classes? Do you think it opens up the possibility of successfully streaming videos to people and eliminating the traditional classroom? Or should the videos simply be available in addition to traditional learning/lecturing?

pimpinlatino411

I think that edu videos are a great way to get students interested in a certain subject, and are a great complement to the classroom. But I don't think they will ever replace the interactivity and discussion of a great classroom. Veritasium has a great video explaining why: https://www.youtube.com/watch?v=GEmuEWjHr5c

How did you get your current position and do you have any advice for someone trying to pursue a

career in scientific communication and outreach?

orangeboy69

I started by writing (a lot) for the student newspaper at UW-Madison, which happened to have a science section. That turned into a science writing internship at the University's communications office, which led to me getting my job at ACS. I started as a writer at ACS, but experimented a lot with video and podcast production. Those experiments led to the creation of the ACS Productions video team and later Reactions.

Some advice to break into the scicomm world: -Get as many published clips as possible, showing a range of different writing styles and forms of content (articles, podcasts and video). Pitch to local news sites, blogs, etc. If you're in high school or college, your student newspaper is the best place to start. -Make a website where you can direct hiring managers and editors to your clips -Go to AAAS or NASW meetings to meet other science writers and hustle for a job (I got my job by networking at a AAAS meeting)

Good luck!

How did you get started with ACS reactions? I'm a current Chemistry PhD student and aspire to create videos and shows like the so many I have learned so much from.

k9ultimate

The series started under the name Bytesize Science around 2007. Our first video attempts were pretty low-budget and (thanks to my terrible abilities as an on-camera host) a bit awkward: https://www.youtube.com/watch?v=SPaYAsd48dU

But we got a lot better over the years, started working with some incredibly talented producers and (paying close attention to our analytics) figured out what viewers responded to most. Once we figured out an approach that we could release on a weekly basis, we relaunched the series as Reactions.

Reactions is a team effort involving chemists, science writers and animators. That said, anybody with a bit of time and the right software (After Effects/Photoshop, in our case) can make similar-ish videos on their own. Like I mentioned above, its best to partner with somebody on a YouTube series, so you can share the work.

What's your favorite reaction?

throwawayamasub

Maillard. So delicious.

Hello Mr Dylewski,

I'm really interested in making science videos too, but I'm just not sure what kind of equipment I would need. What equipment do you use?

Wind123

I've read that the recording gear in our smartphones would cost $900,000 30 years ago. Everything you need to get started is right there on your phone and computer. Great production quality is nice, but not necessary in online video -- storytelling is what matters most.

With that said, a Canon DSLR (t5i) with a shotgun microphone will give you very high quality footage. We film with Canon DSLRs like this, and use macs with Adobe After Effects and Photoshop for the animation. That's pretty much it! For more, this is a great guide for aspiring filmmakers: https://www.youtube.com/watch?v=nLSUrTxquyE

Hey Adam, Chip Dylewski here...just saying hi to a fellow Dylewski! Love the channel!

buffalochipster

(Dylewski internet fist bump)

I am an Entomologist and a new YouTuber. My channel posts educational whiteboard videos all about insects. Do you have any advice for getting your first 100 subscribers? How long did it take you to receive your first 100 subs?

Insectopia

With Bytesize Science (our first channel) it took a while to get subscribers (after four years, we only had around 10,000). Some advice for brand new YouTubers:

-Pick topical subjects -- if there is an insect-related story in the news (colony collapse disorder, for example), make a video on that! YouTube gives priority to videos that cover topics people are talking about.

-Don't just post and expect people to flock to your videos. You have to promote them. In your case, I suggest sending short emails to science bloggers, journalists and others who might be interested in posting your entomology videos on their site.

-Consider working with an entomologist from your local university, or reach out to the Entomological Society of America. In either case, those organizations might be able to help promote or post your content.

-Post thoughtful comments on other insect-related channels on YouTube. Other viewers will see your comments and may click through to your channel.