美国少年化学家挑战活动
视频活动指导

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欢迎大家参加美国少年化学家挑战活动！今年，团队成员需要合力制作一部以**太空中的物态**为主题的视频。视频中需要解释物态概念背后的化学原理，重点例举物质状态在太空中的表现，同时探究一份与太空相关的职业。

视频要求:

1. 视频长度在 3–5 分钟
2. 以一种引人入胜的方式来解释**与太空有关的物质状态**的概念。
   a. 至少要阐述一些关于粒子/分子行为的细节，以及物质状态这一核心概念如何有利于观察物理属性。
3. 解释**物质状态**这一概念对于理解**太空**的重要性。
4. 描述一份吸引你们团队的与太空有关的职业（不一定是宇航员），包括你所选择职业的教育途径和工作职责。
5. 寻找并解释三个与物质**状态**有关的**太空**现象。
   a. 注意：现象是发生在宇宙中的可观测事件。不需要很复杂，只要是你观察到并且可以用科学知识解释的现象即可。
6. 开场和结尾字幕
   a. 开头标题必须包括视频标题和主题。
   b. 结尾标题必须包括学校、姓名、团队成员分工和 APA 或 MLA 格式书写的参考文献。
   c. 开头和结尾字幕分别不超过 10 秒钟。
7. 视频和**故事展板**一并发送邮件到 science@seedasdan.org，邮件主题请以“YBTC 微电影提交+团队号+团队成员姓名”为名。

研究主题:

以下的关键词库可以作为团队视频的研究主题。**但这并不是一个完整的主题列表**，很多主题没有包含。你的团队完全可以不使用下面提供的主题，这只是想激发你们制作视频的灵感。但无论是否选择关键词库里的主题，你们团队的主题和研究内容都要和视频字幕相吻合。

关键词库:

物质的状态：化学性质，化学反应，化合物，冷凝，能量守恒，物质守恒，密度，沉淀，位移，元素，能量，能量转换，力，凝固，气压，气体，液体，熔解，混合物，相变，物理性质，等离子体，固体，升华，表面温度，表面张力，蒸发，粘度，体积

太空现象:天体化学，宇航学，大气化学，黑洞，玻色–爱因斯坦凝聚体，恒星组成，日冕洞，元素起源，流动化学，星系循环，星系，国际空间站，恒星的生命阶段，银河系，卫星，行星组成和大气，行星性

质，行星地质测绘，火箭飞船，太阳耀斑，太阳现象，恒星的衰亡，恒星孕育区，恒星类型和属性，太阳黑子

注：太空始于卡门线（一条假想的距离地球 100 公里[62 英里]的线，向外延伸贯穿整个宇宙），在这条线上没有可感知的空气用于呼吸或散射光线。视频不需要只关注这条线以外的太空，可以包括在地球上进行的与太空或太空探索有关的研究。此定义是为了明确太空的起点。

其他要求：

1. 格式和分辨率
   a. 视频格式为 .mp4 – 任何平台都可播放的通用格式
   b. 分辨率至少为 640 x 480 pixels (HD： 1920 x 1080)

2. 原创内容和受版权保护的资料
   a. 研究中参考的所有文献需要以 APA 或 MLA 格式展现在视频结尾。获取更多关于文献目录的指导请参考 this resource created by Science Buddies® 。
      i. 文献名单必须包括题目，作者，出版商及版权登记日期
      ii. 文献可以是网络资源，采访，图像和视频。
   b. 所有内容必须遵循相关版权规定。我们建议同学们使用**原创**内容，避免侵犯版权。如果在你的视频里使用了其他资料，请确认至少符合以下一个适用条件：
      i. 它发布在公共领域，也就是意味着它出版于 1922 年或更早。但是，请确保您使用的歌曲可以在公共领域使用。例如，泰勒·斯威夫特(Taylor Swift)演唱的《一闪一闪亮晶晶》(Twinkle, Twinkle Little Star)可能有自己的版权保护，但你可以和你的团队一起表演，自由使用。更多关于公共领域的信息请参见 https://www.pdinfo.com/public-domain-music-list.php.
      ii. 它有知识共享署名许可。只要你注明原作者/表演者，授权允许你使用特定作品。在研究某一作品的特定的知识共享许可时要注意，并确保它是一个知识共享署名许可。请访问 https://creativecommons.org/licenses/ 获取更多信息。
      iii. 它是完全免版税的。如果原作者/作曲家允许他们的作品被无限制地使用，这就是免版税的。提供免版税音乐的网站通常会注明这一点，所以一定要查看你使用的作品授权信息。**注意：**如果歌曲、图像等是“免版税供教育使用”的，那么你不能在提交的视频中使用它，因为美国少年化学家挑战活动的奖品具有货币价值。

3. 非团队成员贡献
   a. 成年人或其他非团队成员要尽量不出现在视频中。挑战活动的组织者、协调者和其他非团队成员不可过多参与研究、故事展板、微电影以及研究报告的编辑。
   b. 非团队成员参与故事展板和视频制作只限于：

i. 帮助组织团队
ii. 帮助团队的时间管理
iii. 提供反馈或指出错误
    1. 非团队成员可能会指出不准确的陈述或解释，**但**不能提供思路或者解决办法，否则会让团队失去参与资格。(注:比如可以指出事实性错误，但**不能直接**纠正这些错误。如果一个成年人看到一些认知错误或明显的事实错误，应该引导学生重新核查事实或进行更多研究)。
iv. 提供会议地点
v. 确保安全
    1. 指导学生怎样使用工具–包括实验材料，项目所需的硬件和软件，但**不可**过多参与项目。
vi. 给予鼓励
vii. 在视频中充当临时演员

You Be The Chemist Challenge® Video Guidelines

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As part of the *You Be The Chemist* Challenge®, teams will create a video investigating the concept of **states of matter** related to **space**. Videos should explain the chemistry behind the concept of states of matter, highlight examples of the concept found in space, and explore a career related to space.

Your video must:

1. Be 3-5 minutes in length. Videos shorter than 3 minutes or longer than 5 minutes will not be scored.2
. Provide an engaging explanation of **states of matter** related to **space**.
    a. Include at least some detail describing particle/molecular behavior and how the core concept of states of matter contributes to observable properties.
3. Explain why **states of matter** are important in understanding **space**.
4. Describe one career path related to space that interests your team (selected career path may not be "astronaut"), including the education path and job duties of your chosen career.
5. Identify and explain 3 different phenomena found in **space** that are related to **states of matter**.
    a. Note: A phenomenon is an observable event that occurs in the universe. A phenomenon does not have to be complex, just something you observe happening that you can explain using your scientific knowledge.
6. Opening and closing titles
    a. Opening titles must include video title and concept.
    b. Closing titles must include school, student names (first names and last initials), team member contributions, and citations in APA or MLA format.
    c. Opening and closing titles should be a maximum of 10 seconds in length each.
7. Be submitted along with a completed Storyboard to science@seedasdan.org, named by " YBTCvideo + Team number + name".

Research Topics:

The word banks below provide suggestions for possible research topics for your team's competition video. **This word bank is not an exhaustive list**, and many topics are not included. Your team is not required to use any of the below suggestions in your video; rather, this word bank serves as inspiration for possible topics to explore in your video. Whatever topic you choose, whether it is from this list or not, it is your team's responsibility to connect that topic and your research to the video prompt.

Key Word Banks:

States of Matter: Chemical Properties, Chemical Reactions, Compounds, Condensation, Conservation of Energy, Conservation of Matter, Density, Deposition, Displacement, Elements, Energy, Energy Transfer, Forces, Freezing, Gas Pressure, Gases, Liquids, Melting, Mixtures, Phase Change, Physical Properties, Plasma, Solids, Sublimation, Surface Temperature, Surface Tension, Vaporization, Viscosity, Volume

Space Phenomena: Astrochemistry, Astronautics, Atmospheric Chemistry, Black Holes, Bose-Einstein condensate, Composition of Stars, Coronal Holes, Elemental Origin, Flow Chemistry, Galactic Recycling, Galaxies, International Space Station, Life Stages of Stars, Milky Way, Moons, Planetary Composition and

Atmospheres, Planet Properties, Planetary Geological Mapping, Rocket Ships, Solar Flares, Solar phenomena, Star death, Stellar Nurseries, Star Types and Properties, Sunspots

For purposes of this competition, space begins at the Kármán Line (an imaginary line 100 kilometers [62 miles] above earth which continues outwards throughout the universe), at which there is no appreciable air to breathe or to scatter light. Videos do not need to solely focus on the space beyond this line, and videos may include research done on Earth related to space or space exploration. This definition of space is provided for clarity on where space begins for purposes of this competition.

Additional Requirements:

1. Format and resolution
    a. Videos should be saved in .mp4 – a universal video format that is viewable on all platforms
    b. Resolution should be at least 640 x 480 pixels (HD is 1920 x 1080)

2. Original content and copyrighted material
    a. A bibliography listing all sources used in researching and creating the video in APA or MLA format must be included in the end titles of the video. Please refer to this resource created by Science Buddies® for more step-by-step directions on creating a bibliography.
        i. Source list must include title, author, publisher, and copyright date
        ii. Bibliography must also include internet sources, interviews, images, and videos
    b. All content must comply with copyright rules and regulations. We advise that students use wholly **original** content in their videos to avoid violation of copyright. However, if using anything other than original content in your video, be sure that one of the following applies:
        i. It is in the public domain, meaning it was published in 1922 or earlier; however, be sure that the particular *performance* of the song you are using is in the public domain. For example, a performance of "Twinkle, Twinkle Little Star" by Taylor Swift probably has its own copyright protections, but you could perform the song with your team and use it freely. For more information about what is in the public domain, visit https://www.pdinfo.com/public-domain-music-list.php.
        ii. It has a Creative Commons Attribution license. This license allows you to use a particular work as long as you credit the original author/performer. Be careful when researching a work's particular Creative Commons license and be sure it is a Creative Commons *Attribution* license. Visit https://creativecommons.org/licenses/ for more information.
        iii. It is completely royalty-free. If an original author/composer allows their work to be used without restrictions, this is royalty-free. Websites that offer royalty-free music will usually indicate this, so be sure to look for the licensing of a particular work you are interested in using. **Be careful!** If a song, image, etc. is "royalty-free for educational use," you may **NOT** use it in your video submission because the prizes for the *You Be The Chemist* Challenge® have monetary value which invalidates educational use.

3. Non-team member contributions
    a. Adult and/or other non-team member involvement in the video competition must be minimal. Challenge Organizers, Coordinators, teachers, parents, and other non-team members cannot actively participate in the research, storyboarding, filming, or editing of any parts of the project.
    b. Non-team member contributions to the storyboard and video may *only* include:
        i. Helping to organize the team

ii. Supporting time management
iii. Providing critical feedback or highlighting factual errors
    1. Non-team members may point out factual inaccuracies or explanations that are confusing or convoluted, **BUT** they may **NOT** contribute ideas, or provide solutions at the risk of disqualifying a team. *(Note – this can include pointing out factual errors but NOT correcting those factual errors. Students should be directed to re-check facts or do more research on a specific explanation if an adult sees a misconception or specific factual error.)*
iv. Providing meeting places
v. Ensuring safety
    1. Adults may instruct students on how to use tools—including lab materials, hardware, and software needed to create the project, **BUT** they may **NOT** actively work on the project.
vi. Giving encouragement
vii. Acting as extras in video