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Curriculum Units by Fellows of the National Initiative
2026 Volume V: Chemistry of Cooking

Chemistry, S.T.E.A.M., and Culture of Popcorn!

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This eleventh grade teaching unit connects to the "Chemistry of Cooking" seminar through the physics and science of popcorn, linking art with the idea of transformation in chemistry. Students explore the structure of liquids, solids, and gases, along with the concepts of changing properties, chemical reactions, and the transformation of one substance into an entirely new product with new properties. Students will see how a small, hard kernel builds enough internal pressure and heat that its shell eventually bursts, transforming into light, fluffy white popcorn, coming to understand the transitions and chemistry behind that change. Through the lens of popcorn, students will gain a deeper understanding of the transformative processes at work in the world around them. Students will then create three art compositions, glued onto black paper to form one triptych. They begin with observational pencil drawings of real popcorn, then transform those drawings into colorful, imaginative new images. Acting as visual detectives, much like spotting a fluffy bunny shape in a cloud, students will study their popcorn drawings and reimagine what the shapes could become. They will render this invented new image in colored pencil, then experiment further with color mixing while creating a final, expressive watercolor composition followed by an artist statement.

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