Chemistry is Out of This World:

Launching a Rocket

Scientists and engineers use chemical reactions to launch massive rockets into space, allowing us to study, explore, and understand more about our solar system and beyond.

Chemistry is at the heart of what makes rockets fly. Rocket propulsion follows *Newton's Third Law,* which states that every action has an equal and opposite reaction. To get a rocket to launch off the pad and escape Earth's gravity, scientists create a chemical reaction that forces gas and particles out one end of the rocket so the rocket will go the other way.

Usually there are two stages of a launch. Most rockets use both a liquid propellant and a solid rocket fuel as an extra booster. (Of course, these fuels are a little different from the materials used to launch the mini-rockets in our activity!) The fuels are pumped or packed into a combustion chamber. Combustion (burning something) releases energy—a huge amount of energy in this case! The rocket reaction creates a high-pressure and high-velocity stream of hot gases. These gases are propelled out of the engine, pushing the rocket away from Earth, just like the carbon dioxide gas pushes our mini-rockets away from the table!