Let’s talk about burning.

Step 1: Write chemical equation on the board.

$\text{CH}_4 + \text{O}_2 = \text{CO}_2 + \text{H}_2\text{O}$

natural gas    oxygen    carbon dioxide    water

Step 2: Assign volunteers chemical cards.

$\text{H} \quad \text{H} \quad \text{H} \quad \text{C} \quad \text{O} \quad \text{O}$

Step 3: Ask students to arrange themselves as appears on the left side of the equation.

Step 4: Tell the student holding the C to move over to the other side of the room. He/she thinks that he/she is standing in the wrong place and will probably move and stand where you are pointing. You interrupt and say, “Wait! Wherever the C goes, the H’s need to go, too. They are bonded together.

All atoms in a molecule move together

NO!

Step 5: Have all students walk around in their molecule groups because all molecules in the Universe are constantly moving.

Step 6: Add a spark. Make a fun noise and tell students this added energy caused them to be broken away from one another.

Step 7: They will have to find new partners. Which partners will they choose? They should follow the chemical equation and make the right side now.

We need an O.

So do we.

Step 8: Show that the chemical equation isn’t balanced. Add two more oxygens and repeat the whole process from beginning to end.

Lots more energy.

Step 9: The new molecules should also be moving, but they should be moving REALLY FAST because this chemical reaction gave off energy.