Research on Student Learning

Middle- and high-school student thinking about chemical change tends to be dominated by the obvious features of the change. [1] For example, some students think that when something is burned in a closed container, it will weigh more because they see the smoke that was produced. Further, many students do not view chemical changes as interactions. They do not understand that substances can be formed by the recombination of atoms in the original substances. Rather, they see chemical change as the result of a separate change in the original substance, or changes, each one separate, in several original substances. For example, some students see the smoke formed when wood burns as having been driven out of the wood by the flame. [2]

References

[1] Driver, R. (1985). Beyond appearances: The conservation of matter under physical and chemical transformations. In Driver, R. (Ed.), *Children's ideas in science* (pp. 145-169).

[2] Andersson, B. (1990). Pupils' conceptions of matter and its transformations (age 12-16). In Lijnse, P. (Ed.), *Relating macroscopic phenomena to microscopic particles* (pp. 12-35).