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Anna Marie Bergman* (a.bergman@pdx.edu). *What group is it? Well it depends on who you know. Students' varying use of group isomorphisms while investigating molecular structures.*

This presentation will show how mathematics students engaged with the concept of group isomorphisms in the context of chemistry. Three pairs of students, graduate students with extensive group theory experience, undergraduates who had completed an introductory group theory course, and undergraduates with no prior group theory exposure; all participated in a series of teaching experiments. For each experiment students were given ball and stick models of various molecules and through a series of tasks each pair successfully developed a classification algorithm for most molecular structures. However, during their mathematical activity each of the pairs engaged with group isomorphisms quite differently. The graduate students established isomorphisms verbally considering various observable group properties such as number of elements, self-inverses, etc., but rarely produced explicit maps. In contrast those who had taken an introductory course focused on defining explicit bijections between groups and then argued they were isomorphic through their extensive use of Cayley tables. Lastly, the undergraduates with no previous group theory experience, who also had no formal knowledge of isomorphism, quickly noticed isomorphic groups by attending to similarities in their group presentations. (Received September 17, 2019)