Polytails and Urban Tumble Weaves: The Chemistry of Synthetic Hair Fibers

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The focus is the chemistry of polymers. The goal is to introduce the subject of polymers to students in a fun and engaging way. Students will investigate the basic properties and behavior of polymers, through the lens of synthetic hair fibers. The encapsulated view of hair, natural and synthetic, as expressed in popular media, will serve to open the discussion on polymer chemistry. Exercises and assignments in the unit will draw from the social and cultural experiences of the students. Through facilitated discussions, students will be guided to survey polymers around them. They will create and test various polymeric materials, including various types of synthetic hair. Using appropriate tools of investigation, students will observe and evaluate the properties of synthetic hair fibers along with other polymers. Additionally, students will construct models that simulate polymer structure to inform their understanding of morphology of synthetic and real hair. The unit is designed to promote collaborative learning, to stimulate students to generate questions in order to consolidate their learning, to reinforce reasoning skills and laboratory skills. Daily re-looping of content will be essential in assisting students to retain and learn material.

(Developed for High School Chemistry, grade 11; recommended for High School Physical Science and Chemistry, grades 9 and 11)