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High school project has lofty aims

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By Keith Essenburg
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Sam Bowerman wants a career in chemistry. But the Hudsonville junior never realized he would begin college-level research work in high school.

Sam, 16, is one of 14 advanced chemistry students at Hudsonville High School working to create a heat-resistant polymer that might one day make it on to NASA space shuttles.

"We gain a learning experience and see exactly what people are doing, how experiments are being done" in the field of chemistry, Sam said.

The project is directed by teacher Kevin Conkel as an outgrowth of a seven-week teaching class Conkel took this summer from professor Robert Smart at Grand Valley State University.

The class emphasizes a teaching model that challenges high school students to think up their own problems and then find solutions.

"We're trying to get kids to think on their own, come up with their own ideas," Conkel said.

Smart said the teaching course Conkel attended is a pilot program funded by a grant the university received from the National Science Foundation. Called Target Inquiry, the program will run for five years, Smart said.

Conkel said that toward the end of his summer Target Inquiry classes, he proposed to Smart that he be allowed to apply what he had learned to his advanced placement chemistry students.

Familiar with Smart's recent work on trying to create a polymer that would withstand temperatures of 700 degrees Celsius, Conkel suggested Smart let Conkel and his students help Smart continue his experiments.

Smart responded enthusiastically to Conkel's idea.

"Quite often, kids don't see the connection between what's talked about in class and real-world applications," Smart said.

Conkel said his students meet as early as 6:45 a.m. on some days to experiment with the polymer and add or subtract various ingredients to increase its heat resistance.

He said Smart, so far, has managed to produce a polymer that will withstand temperatures of 300 degrees Celsius.

If Conkel and his students can find a way to produce a polymer that will withstand 700 degrees Celsius, the product could make its way onto a NASA space shuttle.

Smart said he will keep in touch with Conkel, inviting him and his students to GVSU on a regular basis to review the students' work and to analyze the polymers they have created.

The analyses will help Smart, Conkel, and the Hudsonville students see what effect the adding or subtracting of ingredients had on improving the polymer's heat resistance, Smart said.