

Santa Cruz Sentinel

50 CENTS
At The Newsstand
SANTA CRUZ, CALIFORNIA

149th Year, Vol. 153
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PUBLISHERS CO.

www.santacruzsentinel.com

FRIDAY, JUNE 3, 2005



Alianza seventh graders Ana DeLeon, Alejandra Pacheco and Gabriel Joseph Johns Robledo watch as a magnet floats above a dish of liquid nitrogen during Thursday's demonstration.

Alianza students find physics can be fun

By **TOM RAGAN**
SENTINEL STAFF WRITER

WATSONVILLE — How do you get a bunch of seventh graders to pay attention in science class when the summer is near and the smell of the beach is in the air?

The answer is simple. There's actually a science to it.

Bring out a big jug of liquid nitrogen, place a few super conductors in small dishes, then tantalize the middle schoolers by making a bunch of magnets float in the air.

That was the scene Thursday morning at Alianza Charter School, brought to 30 students by their science teacher Caitlin Johnston and

Zach Schlesinger, a physics professor at UC Santa Cruz.

But perhaps more fascinating than the gravity-defying physics was the spontaneity and randomness that brought Schlesinger to the classroom.

In an era of the Internet, power lunches, bureaucracy and highly calculated scheduling, Schlesinger merely picked up the phone, called the school, got a hold of Johnston and told her he had some cool science to show the kids — if she was interested, that is.

She was.

With no science lab and never enough money to develop an extensive science curriculum, Johnston said it's always nice to have a real live

scientist visit the classroom.

"It was a real treat," said Johnston, who prepped the class by telling the students that liquid nitrogen was really, really cold (321 degrees Fahrenheit below zero) and that they should not drink it or mix it with other chemicals.

Schlesinger's been performing this trick for students since 1987, with his first classroom appearance coming in none other than his daughter's own nursery school (she now attends Brown University).

For those outside the science circles, a super conductor basically looks

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Alianza Charter School science teacher Caitlin Johnston keeps an eye on Mauricio Velasquez as he pours liquid nitrogen during Thursday's experiment.

Shmuel Thaler/Sentinel

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like a piece of rock, and it's made of copper and oxygen.

But here's the kicker: When you place the super conductor in a dish and mix it up with the frosty liquid nitrogen, electricity takes on a whole new meaning, because there's very little resistance —

and with less resistance comes greater capabilities, like floating magnets.

It's called high-temperature super conductivity, and it was discovered in 1987.

But try describing the process to a group of seventh graders. Chances are their eyes will glaze over. Showing them superconductivity at work, however, is another matter.

"It's fun to actually be doing something instead of reading about it in a book," said Anahis Ponce, summing up the electri-

fying atmosphere for all the class.

And that's what it's all about, said Schlesinger, who's been teaching physics at UCSC for the last 10 years.

And just how important has the discovery of high-temperature super conductivity been to the human race?

Well, let's put it this way. Scientists and venture capitalists are actually looking into what would seem to be a far-fetched but nonetheless plausible invention: Levitating train systems operated by liquid

nitrogen.

But that's probably not going to happen for a long, long time.

For now, the applications are highly educational, as was witnessed in the classroom on Thursday.

"It's just fun to see the excitement in their eyes," said Schlesinger.

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