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Professor Uses Everyday Microwaves to Disinfect Masks

Professor David Ruzic, the Abel Bliss Professor of Engineering at the University of Illinois Urbana-Champaign, leaned back in his chair with a small smile on his face.

Between packed bookshelves and a desk with multiple PC monitors, Ruzic began to talk about his side project with microwaves during the pandemic.

“At the height of the pandemic, there was a shortage of N-95 masks, right?” Ruzic said. “I even had some friends in the medical field saying ‘you know you’ve got the virus all over you. Normally, you would just throw that mask away and replace it.’”

Ruzic described how, during the shortage, medical staff were reusing N-95 respirator masks rather than replacing them.

“And I was thinking, I had done a variety of things with plasmas to kill microbes.” Ruzic said. “So I thought, ‘Well if I can make a plasma in a microwave with everyday objects - every floor of every hospital has a microwave oven -- could you use it to sterilize masks?’”

Professor Ruzic then experimented, tested his results with fellow professors, and sent his findings to the CDC.

Professor Ruzic’s experiment was successful in showing that using an everyday microwave oven, it was possible to kill viruses like COVID-19 without damaging masks.

“It makes a bright brilliant plasma in your microwave oven, with a coat hanger! A coat hanger, coffee cup, and some saline.” Ruzic said. “I don’t know if anyone’s used it, but you’re trying to do your part where you can.”

A video starring Professor Ruzic and the method he used is available on YouTube at this link:

<https://www.youtube.com/watch?v=7gm8QBbFGyM>.

Professor Ruzic received his Bachelor's in Physics/Applied Math from Purdue University in 1979 and his Ph.D. in Physics in 1984 from Princeton University.

Ruzic said his passion for science was mostly due to his father.

Neil P. Ruzic was a writer who founded and published several worldwide scientific magazines, including Industrial Research and Oceanology International.

Professor Ruzic recalled one day he was about 12 years old when his father asked him if he would want to run his own magazine one day.

Professor Ruzic replied, “No dad, I’d rather do science than write about it.”

After receiving his Ph.D. at Princeton, Ruzic became an Assistant Professor at the University of Illinois at Urbana-Champaign, the first and only university Ruzic has taught at.

“Being in front of large group, or any kind of group of people, was to me not something to shy away from, it was something that was enjoyable” said Ruzic.

Ruzic recounted his time as a TA at Purdue for a large physics class that first attracted him to teaching.

“I really enjoyed seeing the lightbulb go on above the students' heads, and to see them succeed.” Ruzic said.

Ruzic said that although he only spends about three hours in a formal classroom, his teaching extends to his research with graduate students.

“Research really is teaching. At the moment, I will have 15 graduate students and I hope to work one on one with each of them.” Ruzic Said. “It may be only 10 minutes here, 15 minutes there, that's still teaching, that's still mentorship.”

One of Professor Ruzic's newer graduate students, Andrew Herschberg, said “He's one of the best professors here. He came here and basically got to make his own lab with all these projects he's interested in. It's very cool.”

Although he's been teaching for 37 years, Professor Ruzic said he wants to keep teaching for a long time.

“I can never imagine not doing this.” Said Ruzic. “Where I get the most job satisfaction is seeing my students succeed.”