

ENGINEERING INNOVATION CHALLENGE 2021: JULY WORKSHOP -INTRODUCTION TO RADIATION, TALK BY PROF CHUNG-

QUESTION & ANSWER SEGMENT

Q: How do we use gamma radiation in our project? We have researched and most sources are too dangerous and hence import to Singapore without licencing is prohibited.

A: Please ensure that the sources you are using are safe and adhere to the regulations. The key idea is your concept. If you really need the source, you may contact SNRSI who may assist on a case by case basis. Schools that have sources below the exemption limit can use that.

Q: What's the difference between ionising and non-ionising radiation?

A: Ionising radiation are radiation that possess sufficient energy to ionize atoms by detaching electron from their orbits whereas non-ionising radiation do not possess sufficient energy to do so. Some examples of ionising radiation includes X-ray, Gamma ray, alpha particle and beta particle. Microwave and visible light are non-ionising radiation

Q: Do all plastic cups have the same amount of radiation as shown?

A: The cup shown in the demonstration is an antique that has Uranium in its glazing, and not commercially available anymore. It is ceramic, not plastic.

Q: When building our prototype we don't need to include a radiation source within it even if it is part of our product? We can just focus on the main idea/concept?

A: Yes, most importantly your prototype must show how radiation is used. You can use some simulation and calculation. It is not a requirement for the source to be within the device as there may be some safety issues. You need to be creative to demonstrate how the prototype works, and you can build the prototype without the source.

Q: Carbon radiation is very interesting, if you can give more insight into it , it will help students. I believe this is C14 that has radioactive properties

A: One example shown in the workshop is the use of carbon-14 in dating techniques. Carbon dating is a method for determining the age of an object containing carbon materials through the radioactive nature of the carbon-14.

Q: How to get the detector (Rad-X) shown in the demonstration? Does the device come with the app?

A: One detector is given to each team participating in the Engineering Innovation Challenge (Cat 1-3). The companion app can be downloaded via the link provided in the quick start guide provided along with the detector.

Q: How can the Geiger counter detect the radiation from the balloon when it does not seem to detect radon gas?

A: In the radon balloon experiment, the Geiger counter does not detect radon gas directly. Instead it detects the charged daughters that are emitted in the radon decay chain.