Radon monitor

Radon is a well-known human carcinogen and is the largest natural contributor of background ionizing radiation dose for the average person. As a result, it is estimated that upwards of 21,000 Americans and 1,400 Canadians die every year due to radon induced lung cancer. Organizations such as the World Health Organization (WHO) have been taking a keen interest in raising awareness and advising countries on radon prevention and mitigation.

There is a variety of commercial radon detectors on the market. The most readily available detectors are one-time use, measuring a long-term average of the radon concentration. This property often makes these detectors unattractive from the viewpoint of many users. Other more sophisticated radon detectors are simply too expensive for the typical consumer. As a result, there is a need for an inexpensive radon monitor that could be widely adopted.

A group of Carleton alumni with experience in this application will help advise and direct this project with the goal of creating a radon monitor. The project may be divided into multiple smaller projects for the students. For example, a typical radon monitor may have the following parts: sensor, high voltage generating circuit, microcontroller with peripherals, and supporting software. In addition, the development of one of the parts is not necessarily dependent on another part being complete.

The external advisors can provide assistance in setting up this project (guidelines, goals, specifications, etc.). They are also willing to come to Carleton to provide support and provide access to PCB assembly, 3D printing, test environments, and some equipment.