RADON DEATH CLOCK: A NOVEL METHOD FOR ASSESSING THE POSTMORTEM INTERVAL WITH RADON. **Behnam Ashrafkhani**[1], Armin Tabesh[1], Fredrik Tamsen[2], Aaron Goodarzi[1], Martin Tondel[3,4], Robert Ian Thompson[1] and Michael Wieser[1], [1]Department of Physics and Astronomy, University of Calgary, Canada; [2]Department of Surgical Sciences, Forensic Medicine, Uppsala Universitet, Sweden; [3]Occupational and Environmental Medicine, Department of Medical Sciences, Uppsala University, Sweden; [4]Occupational and Environmental Medicine, Uppsala University Hospital, Uppsala, Sweden. (behnam.ashrafkhan1@ucalgary.ca)

The determination of the elapsed time since the death of an individual is a challenging problem in forensic science and largely based on biological and biochemical indicators that often yield uncertain results. The goal of this study is to develop a method for post-mortem interval investigation that is not affected by environmental processes. This method is dependent on the decay of radioactive nuclides that accumulate in tissues in the body. In this context, the quantification of long-lived radioactive 222Rn decay products including 210Pb, 210Pb, and 210Bi is employed. Accurate measurement of the relative amounts of selected isotopes enables the determination of the elapsed time since death of the individual. The use of isotope abundance ratios has the advantage that knowledge of the absolute amounts of radon is unnecessary. In this talk, I will present the method and model data to demonstrate how this approach could provide the time of death of an individual with second precision over the period of two weeks. Additionally, variable exposure to radon during life reduces the precision by few hours.