



Genesis and equilibrium of natural lithospheric radioxenon and it's influence on CTBT-compliant subsurface noble gas samples

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Subsurface radioxenon sampling is an integral part of the Comprehensive Nuclear-Test-Ban Treaty verification. If radioxenon is thus detected, analysis of isotope ratios should reveal whether it's source is an explosion or a nuclear plant.

However, there is another source of radioxenon, namely the natural lithospheric ^{235}U , ^{238}U and ^{232}Th content. The assessment of the prevalent neutron spectrum makes it possible to model the spontaneous and induced fission, resulting in an equilibrium of daughter nuclides, especially the xenon isotopes. They diffuse into the rock pore spaces and mix with any anthropogenic noble gases.

This talk will try to evaluate the effects of such contamination of subsurface noble gas samples on the CTBT-compliant measurements.