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# Radon mitigation strategies for current and future liquid xenon detectors

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Dual-phase liquid xenon time projection chambers (TPCs) are a compelling technology for the detection of rare events such as the interaction of dark matter particles. A dominant background is induced by the radioactive noble gas $^{222}Rn$, which emanates from material surfaces and distributes homogeneously throughout the detection volume. This problem is usually addressed by a stringent material pre-selection in combination with active radon removal techniques. Both methods have been successfully applied in the XENONnT experiment, which recently achieved an unprecedented low radon concentration of less than 1μBq/kg.
Future liquid xenon detectors, like Darwin/XLZD and nEXO, require a further reduction of their $^{222}Rn$ concentration. To reach this goal, the established mitigation methods need to be complemented by novel radon prevention techniques. This contribution will discuss the feasibility to employ surface coatings as barriers against radon emanation. Different coating techniques have been evaluated, with a focus on the electrodeposition of copper. A very promising radon suppression of three orders of magnitude has been achieved using a custom-made stainless steel radon source. Possible applications and future challenges of this technique will be discussed.

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