

LIQUID XENON PURIFICATION USING HIGH-VOLTAGE ELECTRIC DISCHARGE TECHNOLOGY

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A very efficient purification technology of liquid xenon using a high-voltage discharge between titanium electrodes is described. Lifetime of quasi-free electrons in liquid xenon has been increased from less than 0.1 μs up to more than 50 μs at electric field strength from ~ 50 to ~ 500 V/cm. It was shown that this technology allows to remove even complicated molecular impurities from significant amount of liquid xenon what is quite difficult using standard getters. Purified with this method xenon is planned for the use in the RED-100 detector for observation of the elastic coherent scattering electron antineutrino off xenon nuclei.

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