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Development of coated electrodes with low quantum efficiency for future direct dark matter experiments with liquid xenon

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In direct dark matter experiments using liquid xenon (Xe), scintillation and ionization signals are produced by an interaction between Xe and dark matter. A scintillation photon can produce an electron through photoelectric effect on electrodes, which is one of the major backgrounds for low-mass dark matter searches. For future direct dark matter experiments using liquid Xe, we are developing coated electrodes with low quantum efficiency (QE) to reduce such background. In this talk, I will present about the results of QE measurements for some electrodes (ex: Au, Pt, Al, SUS304) and also some insulators (ex: PTFE, Quartz, PEEK) in vacuum, liquid Xe, and gas Xe.

Primary author: Mr AOYAMA, Naoki (Nagoya University)

Co-authors: Prof. ITOW, Yoshitaka (Nagoya University); KAZAMA, Shingo (Nagoya University); KOBAYASHI, Masatoshi (Nagoya University); YAMASHITA, Masaki (The University of Tokyo)

Presenter: Mr AOYAMA, Naoki (Nagoya University)

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