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New candidate polymeric wavelength shifters for noble liquid detectors

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Scale-up of light collection scheme is a major challenge for the future multi-tonne detectors with surface area of many hundreds or even thousands of square meters. Large-format polymeric wavelength shifting foils are a compelling alternative to traditional vacuum evaporated coatings. Inspired by the success polyethylene naphthalate (PEN), which already finds use in large liquid argon detectors, other polymers have been surveyed that have not been considered before for this application. Some new candidates, exhibiting similar property of blue excimer fluorescence emission, have been identified and characterized. First measurement results will be reported; at room temperature with near UV excitation, as well as in cryogenic conditions under vacuum ultraviolet excitation, in conditions representative for the application.

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