

# Characterization of New Meter Scale Light Guides for Liquid Argon TPC Light Collection

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The ability to detect 128 nm scintillation light from liquid argon (LAr) is of critical importance in current and future liquid argon time-projection chamber (LArTPC) experiments. To this end, tetraphenyl butadiene (TPB) has been employed in light collection systems to shift 128 nm light to visible wavelengths. Work has been done recently using TPB in conjunction with light guides to improve light collection. We have developed improved techniques for producing TPB coated acrylic light guides with attenuation lengths exceeding 1 m when measured in air. These improvements have come from a new acrylic based coating as well as a new technique for applying the coating. Measurements taken in both air and LAr have allowed us to create a model connecting the behavior in LAr with that in air which is in good agreement with data. This model can be used in simulations for future lightguide based experiments, such as SBND and DUNE. It also allows quality control of new light guides without requiring costly measurements in LAr.

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Users Meeting Poster

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