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## He-CF<sub>4</sub> and He-CH<sub>4</sub> mixtures for THGEM-based GPMs operating at cryogenic temperatures

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This work presents the experimental measurements obtained for UV-induced photo-electron extraction efficiency from a CsI photocathode into He with CF<sub>4</sub> and CH<sub>4</sub> gas mixtures. A 1000Å CsI photocathode was deposited on a gold plated THGEM for photo-electron conversion. Charge-gain measurements were obtained with a Single-THGEM detector operating in these gas mixtures using a UV lamp for the extraction of photo-electrons. Charge-gains in excess of 10<sup>5</sup> were obtained for gas mixtures containing percentages of quencher higher than 20% while photo-electron extraction efficiency was ~50% for He/CF<sub>4</sub> and ~30% for He/ CH<sub>4</sub>. A discussion for future cryogenic applications is presented.

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