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A Cryogenic Target for Compton Scattering Experiments at HIγS[1] DAVID KENDELLEN, MOHAMMAD AHMED, HENRY WELLER, Triangle Universities Nuclear Laboratory, GERALD FELDMAN, George Washington University — We have designed, constructed, and tested a cryogenic target for use at the High Intensity γ-ray Source (HIγS). The target is able to liquefy helium (LHe), hydrogen (LH_2), and deuterium (LD_2). It precools room-temperature gas in two stages with a Gifford-McMahon cryocooler. The precooled gas condenses onto a series of copper fins and drips down to fill a 0.25 L Kapton target cell. The cryotarget will be used to measure nuclear and nucleon electromagnetic polarizabilities. The electromagnetic polarizabilities of the nucleons, α and β, will be probed by scattering a γ-ray beam on unpolarized LD_2 and LH_2 targets. Scattered photons will be detected by the HIγS NaI Detector Array (HINDA). We have tested the target with LHe at 3 K and are preparing for LD_2 testing and production running.

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