

30 Years of Photodissociation Regions:

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A photodissociation region in H_{II} region N55 of the LMC

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We present observations of molecular line emission, morphology and physical characteristics of a spatially resolved and edge-on PDR in H_{II} region N55 in the LMC. The H_{II} region N55 is ionized by at least six O type stars. The PDR at the northern edge of lower lobe in the H_{II} region is illuminated by an O6 star and two O9 stars located within 3pc southward of the PDR within the H_{II} region. This PDR has a slabbed clumpy structure in H₂ 28 μ m, PAH and dust emission which give us an edge-on view. We will present the FUV radiation field hardness G₀ powered by the luminosities of these stars, excitation temperature and column density of warm molecular hydrogen gas and its distribution relative to PAH, dust and CO observations. We have high angular resolution observation of H₂ 28 μ m and Si_{II} 34 μ m using Spitzer IRS. Moreover, SAGE-LMC photometric data using Spitzer IRAC (4.5, 5.5, 8.0 μ m), MIPS (24, 70 and 160 μ m), and Herschel PACS (100, 160 μ m), SPIRE (250, 350 and 500 μ m) from HERITAGE. In addition, we have high angular resolution interferometric observation of 13CO(1-0) emission of this PDR using ALMA, and 12CO(3-2) observation using ASTE. In 13CO(1-0) emission, which is optically thin and traces the cold gas, this PDR is a thin clumpy structured. The CO(3-2) emission is more extended. We plan to present a preliminary model of this PDR.