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Phosphor Chemistry in the L1157 Shocked Region山口貴弘、酒井剛 (東京大学)、高野秀路 (国立天文台)、坂井南美、山本智 (東京大学)、他
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Phosphor is a relatively abundant element in the Universe, whose cosmic abundance relative to H is 4×10^{-7} . Although it is lower by two orders of magnitude than Si and S, six phosphor-containing molecules, have been identified in space. They are PN, CP, PO, HCP, CCP and PH₃, where the detection of PH₃ is tentative. Among them, PN is an only phosphor-containing molecule found in molecular clouds, while all of them are detected toward the envelopes of the evolved stars. Although PN has been detected toward massive star forming regions like Orion KL, W51, and Sgr B2, its production chemistry has not been well understood.

In the course of the line survey toward L1157 B1, we have fortuitously detected the $J = 2-1$ line of PN. After this detection, we conducted observations toward the B2 position, which is located in the downstream of B1, as well as toward the IRAS position. We also detected the PN line toward the B2 position ($> 8\sigma$). The calculated column densities of PN are similar between these positions ($4.2 \times 10^{11} \text{ cm}^{-2}$ toward B1, $5.3 \times 10^{11} \text{ cm}^{-2}$ toward B2). On the other hand, the line was not detected toward the IRAS position. This clearly indicates that PN exists in a shocked region. We will present the result of our observations, and discuss the phosphor chemistry in relation to shock chemistry.