

N19a **A Comprehensive Spectroscopic Analyses of the PN IC2165 with Seimei/KOOLS-IFU**

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We performed detailed spectroscopic analyses of a C-rich planetary nebula (PN) IC2165 to characterize the properties of the central star and nebula.

In this study, we utilize the multiwavelength dataset from our own optical KOOLS-IFU 2-D emission-line maps and BOAO/BOES high-dispersion spectrum, the archived mid-IR *AKARI*/IRC and *Spitzer*/IRS spectra. We succeeded in determination of 17 elemental abundances. Of them, the first determination of very rare but important elements F, Rb, and Kr is done by our study. We investigate spatial distribution of ionic/elemental abundances, electron densities/temperatures, and gas mass using the KOOLS-IFU line maps.

In this talk, we present our recent results of this PN.