

## X44a Properties of extremely strong emission line galaxies discovered with Subaru/HSC

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Revealing the nature of low mass strong emission line galaxies is of importance to understand the early stage of galaxy formation and evolution. Detailed studies at high redshift, however, are not easy because of observational limitations. Thanks to its deep and wide imaging data, we are conducting a survey to search for strong emission line galaxies at  $z < 1$  by using Subaru Hyper Suprime-Cam (HSC).

We selected candidates of strong emission line galaxies at  $z \sim 0.3 - 0.8$  by using the excess of the HSC broad-band filters over the entire HSC survey fields. We made a follow-up spectroscopic observation of the candidates with Gemini/GMOS-S and confirmed the spectroscopic redshifts of 19 galaxies at  $z = 0.35 - 0.83$ . From 4 galaxies, we detected very strong [OIII]5007 emission with the rest-frame equivalent width of  $\gtrsim 1000 \text{ \AA}$  and other multiple emission lines including weak [OIII]4363.

The [OIII]5007/[OII]3727 emission line ratio ( $O_{32}$  index) ranges from  $\sim 3$  to  $\sim 10$ , which is comparable to that of SDSS green pea galaxies and Ly $\alpha$  emitters at  $z = 2 - 3$ , indicating extreme ionization states. The resulting oxygen abundance based on the “direct” method using [OIII]4363 is  $12+\log(O/H) \lesssim 8.0$ . One of the sample shows very low oxygen abundance of  $12+\log(O/H) \sim 7.3$ , which is comparable to extremely metal poor galaxies in the local Universe. In this talk, we will discuss the origin of the galaxies with low metallicity and high ionization state.