

X46a The Most Extreme Line Emitters at $z \sim 0.8$

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We present our deep spectroscopic observations with Subaru/FOCAS and Keck/MOSFIRE targeting two [OIII] emitters at $z \sim 0.8$ identified in the wide ($\sim 1000 \text{ deg}^2$) and deep ($\sim 26 \text{ mag}$) Subaru/Hyper Suprime-Cam survey. Our sources are some of the most extreme line emitters with rest-frame [OIII]5007 equivalent widths (EWs) of $5000 - 6000 \text{ \AA}$ and $H\beta$ EWs of $700 - 900 \text{ \AA}$, similar to some $z \sim 7$ galaxies identified with their Spitzer color excesses. Our deep spectroscopy has successfully detected the auroral [OIII]4363 line in both targets, and the gas-phase metallicities are $\sim 0.1Z_{\odot}$ based on the direct temperature method. HeII4686 is also identified in one of the sources, implying a hard ionizing spectrum possibly produced by non-thermal ionizing sources. Comparisons with photoionization models indicate that these galaxies have very young ($< 3 \text{ Myr}$) and low-metallicity ($< 0.01Z_{\odot}$) stellar populations. Given a high ionizing photon production efficiency ($\log \xi_{\text{ion}} = 26.4$) comparable to strong Ly α emitters found in the MUSE survey at $z \sim 4 - 5$, studying high- z counterparts of these galaxies using JWST is important to understand the early formation of these very young galaxies and their contribution to cosmic reionization.