

X16a Subaru/FMOS survey of star forming galaxies at $z \sim 1.5$ in COSMOS

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In the past few years, strong constraints on the star formation history have been established using a large amount of new observational data on large samples of galaxies. Crucial step forward is to disentangle the relations between the star formation rate (SFR) of galaxies and both internal and external properties such as their stellar mass, metallicity, and environment. Recent studies show the tight relation between stellar mass and SFR (e.g. Daddi+07) and the different effect of stellar mass and environment on the galaxy evolution up to $z \sim 1$ (Peng+10) based on photometric and optical spectroscopic large surveys. However there has not been a sufficient large spectroscopic survey with SFRs at the most exciting epoch $z \sim 1-3$, in which the star formation rate density became highest in the cosmic time.

We are carrying out a near-infrared spectroscopic survey of star-forming galaxies at this epoch in the COSMOS field using Subaru/FMOS and measure SFRs based on $H\alpha$ fluxes. We have already obtained secure $H\alpha$ detections of more than one hundred star forming galaxies at $z \sim 1.4-1.7$. Additionally, we are analyzing new spectra that provide emission line detections of $H\beta$ and [OIII] required for estimates of extinction, metallicity and AGN identification and we carry out FMOS observations in January 2013. In this talk, including these new data, we will report on recent progress, starting with the stellar mass - SFR relation, and discuss the galaxy evolution at the important era of star formation history.