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"Star formation, gas, and ISM conditions of high-z starbursts with ALMA"

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It is currently unclear whether galaxies with the highest rates of star formation, at the peak cosmic epoch of stellar growth, convert gas into stars in a mode dissimilar to more typical star-forming galaxies. Such outliers may simply be gas rich or have a higher efficiency of converting gas to stars possibly similar to local ULIRGs and maybe even driven by major mergers of massive galaxies. I will discuss spectroscopic observations with ALMA and IRAM/PdBI of 13 such cases to detect the molecular CO emission line, a tracer of the total gas content. Our sample is based on a large near-infrared spectroscopic survey of star-forming galaxies at $z \sim 1.6$ in COSMOS using Subaru/FMOS. SFRs are measured using multiple indicators (UV, far-IR and Halpha). The NIR spectra further enable us to characterize the chemical enrichment, ionization state and dust content of the interstellar medium (ISM). I will discuss further efforts to use ALMA for studying the ISM of high redshift galaxies at higher resolution.