X44a High-z Galaxies are Hot: ALMA band-8 Dust Temperature Measurements of Star Forming Galaxies at z∼5.5

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The development of sensitive mm/submm telescopes (e.g. ALMA, NOEMA) opened a new window to the far infrared continuum (FIR) emitted by dust in high-redshift star forming galaxies. These FIR continuum observations are used to estimate the total infrared luminosities (L_{IR}) of the galaxies. The L_{IR} estimations need to assume spectral energy distributions (SEDs) that are applied to the single data points obtained by ALMA. Previous studies show the evolution of the FIR SEDs of normal star forming galaxies up to $z \sim 4$, however it is not tested at $z > 4$. Thus, one of the largest caveats of L_{IR} estimations come from the unknown SEDs of the normal star forming galaxies in the high-redshift Universe, and the assumptions of SEDs create up to > 0.8 dex systematic uncertainties. As the shapes of FIR SEDs are most strongly controlled by the dust temperatures (T_d), constraints on the SEDs require T_d measurements. Accurate T_d measurements need multi-band FIR continuum observations, in particular at high frequency ALMA band that is close to the peak of the FIR SEDs. In this talk, we present our recent T_d measurements using ALMA band 8 observations of four normal main sequence galaxies at $z \sim 5.5$. We found, on average, $T_d \gtrsim 45$ K in our sample (i.e. ~ 10 K higher than the T_d of $z \sim 2$ galaxies). We discuss implications of the high T_d to the dust attenuation property of star forming galaxies at $z \sim 4-6$ observed by our recent ALMA large program: ALPINE.