

X36a **SMGs with extremely red optical/near-infrared colors revealed by ALMA**

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We present studies of ALMA-identified submillimeter galaxies (SMGs) with star formation rate of 200–600 $M_{\odot} \text{yr}^{-1}$ extremely faint in the optical/near-infrared (NIR) from our ALMA 1100- μm continuum imaging surveys towards 30 highest- z candidate SMGs. The targets are selected from AzTEC sources by faintness in *Herschel* and VLA 1.4 GHz bands. We find that 10 out of the 17 most significant ($\geq 10\sigma$) ALMA sources are mostly undetected in optical/NIR bands; the stacked magnitudes (AB) of B , z' , J , Ks , 3.6 and 4.5 μm are >29.5 (3σ), >27.3 , >26.3 , 25.7, 23.7 and 23.3. The stacked spectral energy distribution shows an extremely red color of $[Ks]-[3.6 \mu\text{m}] = 2.0$ which could be due to redshifted Balmer and/or 4000 Å breaks at $z \sim 6$, although their stacked radio/millimeter color indicates $z \sim 4$. The millimeter brightest source among the ten, ASXDF1100.053.1 shows an unexpectedly red color of $[3.6 \mu\text{m}]-[4.5 \mu\text{m}] = 1.8$. In order to estimate its redshift we have newly got a deep JVLA 6-GHz continuum image with a (preliminary) rms of 1.2 $\mu\text{Jy}/\text{beam}$. The radio/millimeter photo- z has turned out to be ~ 6 . Our results indicate that there should be dust-obscured massive starbursts at $z \gtrsim 4$ to be discovered by deep ALMA (sub)millimeter surveys.