

## Stellar metallicities at $z > 2.5$ from rest-frame UV spectra (Fergus Cullen)

*Thursday, 12 September 2019 15:25 (18 minutes)*

I will present initial results from the VANDELS survey (DR2) quantifying the relationship between stellar mass and stellar metallicity for a sample of  $\sim 700$  star-forming galaxies at  $2.5 < z < 5.0$ . Stellar metallicities were determined for a set of high signal-to-noise ratio composite rest-UV spectra in bins of redshift and stellar mass (spanning the range  $8.5 < \log(M/\text{Mo}) < 10.2$ ). We find evidence for a monotonic increase in metallicity with stellar mass, with values ranging from 7% solar at the lowest stellar masses to  $\sim 25\%$  solar at the highest stellar masses. We do not find evidence for evolution in metallicity with redshift within our sample, which is consistent with predictions from simulations given the relatively narrow redshift range. However, a comparison to the local stellar mass-metallicity relationship indicates an increase of a factor of  $\sim 4$  in the stellar metallicity between  $z \sim 3.5$  to  $z=0$  across all stellar masses. I will discuss how our results provide further evidence in support of the idea that galaxies at these redshifts are uniformly  $\alpha$ -enhanced, and how this motivates the development of new stellar population models for future high-redshift studies. Finally, I will discuss how these techniques can be pushed to higher redshift in the ELT-era.

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**Track Classification:** CGM/ICM/IGM/Chemical Enrichment