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A New Star-Formation Rate Calibration from the Polycyclic Aromatic Hydrocarbon Emission Features: Application to High Redshift Lensed Galaxies HEATH SHIPLEY, CASEY PAPOVICH, Texas A&M University — Our goal is to calibrate polycyclic aromatic hydrocarbon (PAH) luminosity in the mid-infrared (mid-IR) as a star-formation rate (SFR) indicator that can be used in galaxies that host active galactic nuclei (AGN), where every other SFR indicator is contaminated by the AGN. We use mid-IR spectroscopy from the *Spitzer* Infrared Spectrograph (IRS) and optical spectroscopy from various instruments to calibrate the mid-IR PAH features using ($L_{H\alpha}$ + 0.020×$L_{24\mu m}$) equivalent to dust-corrected H_α measurements (Kennicutt et al. 2009). Our sample consists of 226 galaxies corresponding to a range of total IR luminosity, L_{IR} = L(8-1000μm) = 10^9-$10^{12} L_\odot$ over the redshift range from 0< z <0.6. We find using a unity relation, fit to the star-forming only galaxies (118 galaxies), correlates linearly to ($L_{H\alpha}$ + 0.020×$L_{24\mu m}$) with a gaussian scatter of <0.15 dex. As a result, we present a SFR relation for the PAH luminosity with uncertainties. We then apply our relations to a sample of high-redshift lensed galaxies (1 < z < 3) with previously estimated SFRs from other SFR indicators that are consistent to our PAH SFRs within uncertainties.

Heath Shipley
Texas A&M University

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