

R12a Stellar mass and star formation rate relation of infrared-bright dust-obscured galaxies selected with AKARI far-infrared all-sky survey

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We investigate the star forming activity of a sample of infrared (IR)-bright dust-obscured galaxies (DOGs). Since IR-bright DOGs are likely to correspond to be a maximum phase of star formation and/or active galactic nucleus (AGN) activity in the context of major merger scenario, they could be a crucial population in galaxy formation and evolution. Combining the IR-bright DOGs (flux at $22\ \mu\text{m} > 3.8\ \text{mJy}$) discovered by Toba & Nagao (2016) with *AKARI* far-IR (FIR) all-sky survey bright source catalog version 2, we selected 64 DOGs with FIR data. We estimated their IR luminosity, star formation rate (SFR), and stellar mass for a subsample of 11 IR-bright DOGs with spectroscopic redshift ($0.05 < z < 1.0$) based on the spectral energy distribution fitting. We found that (i) *WISE* $22\ \mu\text{m}$ and *AKARI* $90\ \mu\text{m}$ luminosity at observed frame are good indicators of IR luminosity for IR-bright DOGs and (ii) the contribution of AGN to IR luminosity increases with IR luminosity. By comparing the stellar mass and SFR relation for our DOG sample, control sample of *AKARI*-detected galaxies, and literature, we found that most of the IR-bright DOGs lie significantly above the main sequence of star-forming galaxies at similar redshift, indicating that the majority of *AKARI*-detected IR-bright DOGs are starburst galaxies (Toba et al. 2017 to be submitted).