

R36a Mid-infrared observations of mergers: NGC2782 and NGC7727

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Lifecycle of dust grains, where dust grains are formed and how they are processed and destroyed, is important for the understanding of star-formation and evolution of galaxies. Study of the emission features in the mid-infrared (UIR or PAH bands) in very harsh conditions is of particular interest since the carriers of the emission are thought to be most vulnerable among the dust populations. Here we report the results of near- to mid-infrared (3–24 μm) observations with the Infrared Camera (IRC) on board *AKARI* of two mergers, NGC2782 (Arp 215) and NGC7727 (Arp 222). NGC2782 is a 200–300 Myr old minor merger with long HI tidal tails both in the east and west directions. We have detected extended emission at 7 and 11 μm , which is a good tracer for the UIR bands, in the east side of the galaxy. It shows structures very similar to those seen in the HI map. The star-formation rate estimated from the 7 μm image lies between those estimated from H α and [CII] (Knierman et al. 2013). NG7727 is a merger of an age of 1.3 Gyr old. The IRC observations also clearly reveal the presence of extended emission at 7–15 μm in the northern tail, which has not been seen at optical wavelengths. Comparison of the spectral energy distribution with dust models suggests paucity of very small grains (VSGs) in both extended emissions, suggesting that the band carriers could have been formed from fragmentation of VSGs. Mid-infrared observations of both galaxies suggest that the UIR band carriers can survive or are formed in merging events, and can be a good star-formation tracer even in such environments.