CHAPTER 5

Conclusions

In this research, the multi-wavelength photometry of the compact group of galaxies, NGC 4065, was observed by using BVR_C broadband filters, Red-continuum and [SII] narrowband filters installed on the 2.4m Thai National Telescope. The standard data reduction pipeline has been applied using flat field and dark frames before measuring the B_{25} magnitude of 21 sample galaxies. The zero point of data images in this study was calculated by using stellar magnitudes from "USNO-B1.0" catalog with filter and air mass correction. On the other hand, the SFR was calculated from Hα emission line (6,563 Å) by using the equation from Kriwattanawong et al. [2011] then classified the morphological type of the galaxies along the De Vaucouleurs T-Type system.

The result from the plot between color indices and B_{25} magnitude shows that bright elliptical galaxies tend to be bluer as it becomes brighter. This correlation is also observed with fainter elliptical galaxies of magnitude fainter than -19.0 in *B* with similar results in *V* and *R*

The plot between color indices and *T-Type* of normal galaxies exhibit the same behaviour: the LTGs are bluer than ETGs which is consistent with the previous study by Iskra et al. [2001].

From the plots between $EW(\mathrm{H}\alpha)$ vs color indices and $EW(\mathrm{H}\alpha)$ versus *T-Type*, normal bluer galaxies have more star formation activities than the redder galaxies with $EW(\mathrm{H}\alpha)$ rate more than 10 Å. Thus, the LTGs have more star formation activities than the ETGs. Comparing the result from a previous study [Tasuya, 2012], it can be concluded that the galaxies in the NGC 4065 galaxy group act differently from the field galaxies.

The previous study of Dressler [1980] showed that the star formation rate (SFR)

varies depending on the different environment. With the 21 sample galaxies in the low-redshift compact group NGC 4065 used in this study, it was found that the ETGs seem to be redder than the LTGs. All LTGs and two blue lenticular galaxies have ongoing high star formation, whereas the others are ETGs with $EW(\mathrm{H}\alpha)$ less than 10 Å or non-emission line. It might be that the ETGs have less star formation rate than the LTGs because of the insufficient gas material to produce star formation [Haynes and Giovanelli, 1984]. However, some of the ETGs sample showed high star formation rate despite not being in the dense HI region [Freeland et al., 2009] where hydrogen is abundant to produce star formation, while [Freeland et al., 2010] found the evidence of ram pressure in a star-forming galaxy, UGC07049, which is one of the sample galaxies. The previous result from Haynes and Giovanelli [1984] indicated that most of the ETGs in this compact group are gas-deficient galaxies, whereas rich-gas LTGs could be affected by the dense environment. Young massive stars might be triggered by tidal interaction among galaxy members [Boselli et al., 2006; Moss, 2006] which caused the emission line galaxies to be bluer than the passive ETGs.

5.1 Future Works

The high $EW(\mathrm{H}\alpha)$ of the ETGs in this group have not been concluded yet due to lacking of HI observation in this group. The HI need to be observed to determine the unusual trend that occurred in this ETGs.