CHAPTER 8

MAJOR CONCLUSIONS

Based on the experimental findings and important observations in the present investigation a few major conclusions have been drawn and are summarized as follows:

- The CS casting process refines the phase morphology of primary Mg_2Si as well as eutectic Mg_2Si phase as it enhances the nucleation and fragmentation of dendrites leading to the formation of globular structure due to shearing action of the cooling slope.
- The CS cast hybrid composites have lower porosity compared with the stir cast composites due to lower shrinkage porosity and micro voids as the segregation of TiB_2 particles reduced, this also improved the mechanical and wear properties of CS cast hybrid composites.
- High wear resistance and high COF of hybrid composite with high wt.% TiB_2 particles in **stir casting** suggests it is suitable for **brakes** and **clutch** applications in auto industry.
- In case of **CS cast** hybrid composite, it shows higher wear resistance and low COF even at higher applied loads and sliding distance that makes it suitable for automotive **engine block** and **piston** applications.
- Central composite design of RSM can be effectively applied to develop a mathematical model to optimize the tribological parameters and reduce the number of experiments, which could save the overall time and resource consumptions.

SUGGESTIONS FOR FUTURE WORK

The following suggestions are made based on the present investigation:

1. Study on the effect of various processing technique and grain refiner on the morphology of primary and eutectic Mg_2Si and matrix phase.
2. Study on variation of wt. fraction of reinforcement phases and characterization of hybrid composites.
3. Study on the effect of solution treatment and ageing on microstructural evolution and properties of hybrid composites.
4. Study of high temperature mechanical and tribological behaviour of the hybrid composites.