

Imaging and Polarimetry of Dusty Circumstellar Environments

TIM GLEDHILL¹, J. H. HOUGH¹, P. W. LUCAS¹

¹University of Hertfordshire Centre for Astrophysics Research, Science and Technology Research Institute College Lane, Hatfield, AL10 9AB, UK

The outflows from giant stars, especially those on the asymptotic giant branch, provide the principal source of dust in our Galaxy and in the local Universe. This chemically enriched material is expelled into the interstellar medium and subsequently reincorporated into newly-forming stars and planetary systems. We present imaging and polarimetric observations, particularly at infrared wavelengths, investigating these dusty outflows and show that circumstellar discs often form around mass-losing stars. The results are compared with the dusty circumstellar discs around pre- mainsequence stars and the more evolved debris discs in systems thought to be in the late stages of planet formation. When linear and circular polarimetry are combined additional information on dust grain properties such as shape and degree of alignment can be obtained and we discuss recent circular polarimetric observations of circumstellar environments.