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## Chemistry around AGB stars: a theoretical sensitivity study

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Asymptotic giant branch (AGB) stars are known to lose a significant amount of mass. Besides being interesting dynamical environments, the resulting outflows are rich astrochemical laboratories; close to a 100 chemical species and about 15 newly formed dust grains have been detected so far. They host interesting and unique chemical regimes thanks to the large gradients in temperature and density throughout the outflow. Moreover, chemistry and dynamics are closely linked throughout the outflow, making the study of molecules especially interesting to retrieve the specific physical conditions within AGB outflows. In this talk I will present the results of the first sensitivity study of chemistry in AGB outflows, using a 1D chemical kinetics framework. More specifically, we investigated the effect of the dynamics of the outflow, given by its density and temperature profile, on the chemistry of both C-rich and O-rich environments. I will focus on the envelope extents of parent species and compare to relations from the literature resulting from observational studies. We find that specific combinations of chemical species can help constrain the temperature profile throughout the AGB outflow in observations, an often uncertain parameter.

**Presenter:** MAES, Silke (KU Leuven)

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