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CHIPS: Chemistry in outflows of Post-AGB stars.

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Abstract

Low and intermediate-mass (LIm) evolved stars are major contributors to the enrichment and growth of the chemical complexity of the Universe. Substantial outflows of dust and gas are injected into the interstellar medium during the last stages of LIm stellar evolution, from the Asymptotic Giant Branch (AGB) and beyond. Post-AGBs experience different processes leading to important changes in their molecular content due to the ocurrence of shocks and an enhanced photo-chemistry as they evolve towards the planetary nebulae (PNe) stage. This complex chemistry, which in certain cases resemble that of young stellar objects, is poorly characterized. Our aim is to investigate the molecular content and the chemical evolution of the circumstellar envelopes from the AGB to the PNe stage, making use of (sub)-mm wavelength observations with radio telescopes and chemical kinetics models. We are carrying out different observational projects towards OH231.8+4.2, V Hya, and KJPN 8, among others. Recent observations with the IRAM-30 m telescope towards KJPN 8 allowed us to detect lines of typical molecular young PNe content: CO, CN, HCO^+, HCN, HNC, CS, and isotopologues. Preliminary results on the isotopic ratios ($^{17}O/^{18}O \gtrsim 6$ and $^{12}C/^{13}C \gtrsim 2$) add more constraints to the origin of this puzzling bipolar nebulae, which is still under debate.

My poster is available at https://zenodo.org/record/7048922#.Y8Ew4uzMJz8