

FORMATION OF M-C≡C-Cl (M = Ag or Cu) AND CHARACTERIZATION BY ROTATIONAL SPECTROSCOPY

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The new linear molecule Ag-C≡C-Cl has been detected and characterized by means of rotational spectroscopy. It was synthesized by laser ablation of a silver rod in the presence of a gaseous sample containing a low concentration of CCl₄ in argon, cooled to a rotational temperature approaching 2 K through supersonic expansion and analyzed by chirped pulse Fourier transform microwave spectroscopy. Substitution coordinates are available for the silver and chlorine positions and will be compared to ab initio calculations at the CCSD(T)/aug-cc-pV5Z level of theory. The Ag-¹³C≡¹³C-Cl isotopologue was also observed using a similar gas mixture containing ¹³CCl₄. The Cu analogue Cu-C≡C-Cl was similarly identified and characterized.