$^{12}C/^{13}C$ RATIOS IN MOLECULAR CLOUDS AND AGB STARS FROM MILLIMETER TRANSITIONS OF CN

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Observations of the ^{12}CN and ^{13}CN N=1→0 (113 and 109 GHz) and N=2→1 (227 and 217 GHz) transitions have been conducted towards both molecular clouds and circumstellar envelopes of AGB stars, using the ARO 12m telescope on Kitt Peak, AZ. These measurements are being used to establish $^{12}C/^{13}C$ ratios, and are an extension of previous work done by Savage et al. in molecular clouds (2002, ApJ, 578, 211). Unlike CO and H_2CO, ^{14}N and ^{13}C hyperfine structure of CN can be used to establish optical depths and hence accurate isotope ratios. Observations towards various clouds such as S156, G35.2 and G29.9 in both the N=1→0 and the N=2→1 transitions are consistent with a linear increase in the $^{12}C/^{13}C$ ratio as a function of distance from the galactic center. The AGB study is currently underway and will be used to test models of stellar nucleosynthesis and examine possible correlations between the ratios in clouds vs. stellar envelopes.