SPECTROSCOPY OF CARBON CHAINS AND THEIR IONS

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The electronic spectra of neutral carbon chains, their anions and cations are being observed in the gas-phase. Three different approaches are used. The transitions of the chain radicals, C\textsubscript{n}H\textsubscript{2n-2} have been detected by cavity ring down spectroscopy in a slit jet discharge. Carbon chain anions of the type C\textsubscript{n}^{-} C\textsubscript{n}H\textsuperscript{+}\textsuperscript{-} have been studied by a two colour resonant photodetachment approach. The electronic transitions of the polyacetylene cations, like HC\textsubscript{6}H\textsuperscript{+} and its cyanoderivative HC\textsubscript{4}CN\textsuperscript{+}, have been measured at high resolution in cell and jet discharges using frequency modulation absorption spectroscopy.