

TIME-DOMAIN TERAHERTZ SPECTROSCOPY (0.3 - 7.5 THz) OF MOLECULAR ICES OF SIMPLE ALCOHOLS

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We have recently constructed a time-domain TeraHertz (THz) spectrometer for the study of molecular ices in the far-infrared. Here, we present the results of a study of amorphous and crystalline ices of simple alcohols from methanol (CH_3OH) through butanol ($\text{CH}_3(\text{CH}_2)_3\text{OH}$) in the region of 0.3 - 7.5 THz. We examine the effects of the length and degree of branching of the carbon chain on the observed spectra arising from the bulk, large-amplitude motions which are prominent in this spectral region. We also discuss these results in an astrochemical context: the application of these spectra to astronomical observations of interstellar ices with Herschel PACS/SPIRE and SOFIA.