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Using THz Spectroscopy to Identify Fibrotic Tissue due to Idiopathic Pulmonary Fibrosis ALESSANDRA HOOPES, MARGARET GRANGER, ALEXA URREA, DALLIN ARNOLD, JEREMY JOHNSON, PAM VAN RY, Brigham Young University - Provo — Idiopathic Pulmonary Fibrosis (IPF) is a chronic lung disease that causes irreversible progressive scarring of interstitial lung tissue, and is almost always terminal within 3-5 years. Though there are known risk factors, the exact cause of the disease remains unknown. Current IPF diagnosis is challenging because it is based on visual tests (such as optical tissue images and high-resolution micro CT scans) that can be influenced by interobserver variation. Currently there is no objective, quantifiable method of diagnosing IPF. Due to the success in using THz spectroscopy to identify and image specific biomarkers in other systems, we are developing THz bioimaging histological methods that can provide an objective way to identify fibrotic tissue and diagnose idiopathic pulmonary fibrosis. I will discuss preliminary results showing we can distinguish different components in tissue samples. Current imaging times are long (several hours), and so I will also discuss our progress in constructing a high-speed THz imaging system.

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