The extension of the mid IR towards the far IR spectral range below 400 cm\(^{-1}\) is of great interest for molecular vibrational analysis for inorganic and organometallic chemistry, for geological, pharmaceutical, and physical applications, polymorph screening and crystallinity analysis as well as for matrix isolation spectroscopy. In these cases, the additional far infrared region offers insight to low energy vibrations which are observable only there. This includes inorganic species, lattice vibrations or intermolecular vibrations in the ordered solid state. The spectral range of a FTIR spectrometer is defined by the major optical components such as the source, beamsplitter, and detector. The globar source covers a broad spectral range from 8000 to 20 cm\(^{-1}\). However a bottleneck exists with respect to the beamsplitter and detector. To extend the spectral range further into the far IR and THz spectral ranges, one or more additional far IR beam splitters and detectors have been previously required. Two new optic components have been incorporated in a spectrometer to achieve coverage of both the mid and far infrared in a single scan: a wide range MIR-FIR beam splitter and the wide range DLaTGS detector that utilizes a diamond window. The use of a standard SiC IR source with these components yields a spectral range of 6000 down to 50 cm\(^{-1}\) in one step for all types of transmittance, reflectance and ATR measurements. Utilizing the external water cooled mercury arc high power lamp the spectral range can be ultimately extended down to 10 cm\(^{-1}\). Examples of application will include emission in MIR-THz range, identification of pigments, additives in polymers, and polymorphism studies.