IR spectra of silica (SiO_2) polymorphs in wide wavelength

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In the solar system, silica is one of the most abundant minerals in Earth's crust. But, silica is not usually detected in interstellar and cirumstellar until now.
Recently, silica SiO_2 was detected in the protoplanetary disk around the T Tauri stars and in the debris disks such as HD 15407A. In debris disks of HD 15407, annealed silica (cristobalite and/or tridymite) was a significant fraction and no Mg-rich silicates such as olivine or enstatite were detected.
Many various crystal type of silica exist as quartz, fused quartz, cristobalite, coesite, stishovite. We prepared these various types of silica in natural, synthetic, and commercial with annealing at high temperature or pressed at high pressure. The infrared spectra of these silica were measured in wide wavelength region and cooling temperature from room temperature to 10 K. We discuss on the possibility of detection silica for observation.