On the mineralogical composition of crystalline silicates in cometary dust

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To better understand the mineralogical composition of crystalline silicate in comets, we model infrared spectra of cometary dust using our model of interstellar dust that is an aggregate consisting of submicron grains with an amorphous silicate core and an organic refractory mantle. We consider the amorphous silicate core to crystallize by exothermic chemical reactions in the organic refractory mantle. On the basis of our numerical results, we will discuss the mineralogical composition of crystalline silicates in cometary dust and attempt to identify how, where, and when the crystalline silicates are formed.