

## **Toward understanding the diffuse interstellar medium and Galactic center 3.4 $\mu$ m C-H and 9.7 $\mu$ m Si-O extinction variations**

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Observationally, both the 3.4 $\mu$ m aliphatic hydrocarbon C-H stretching absorption feature and the 9.7 $\mu$ m amorphous silicate Si-O stretching feature show considerable variation from the local diffuse ISM to Galactic center:  $A_V/\tau_{9.7\mu\text{m}}$  and  $A_V/\tau_{3.4\mu\text{m}}$  of the solar neighborhood diffuse interstellar medium are about twice as much as that in the Galactic center. In this talk we will report our recent efforts in trying to explain these variations in terms of a porous, cometary-like dust model consisting of a mixture of amorphous silicate dust, carbonaceous dust (and water ice for the Galactic center case).

Keywords: extinction; infrared; ISM; Galactic center; silicate; aliphatic;