

R04a **The origin of the broad feature at $22\ \mu\text{m}$ and its association with the molecular clouds of the Great Nebula in Carina.**

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In this presentation, we show the CO and ^{13}CO gas in a wide range of excitation states (from $J = 4 - 3$ to $J = 13 - 12$), spatially-resolved down to $\sim 0.5\text{ pc}$, in the Great Nebula in Carina. The observation was performed in an area of $2' \times 7'$ ($2\text{ pc} \times 7\text{ pc}$) near the young ($< 1\text{ Myr}$) open star cluster, Trumpler 14, by the *Herschel* Space Observatory. A broad emission feature at $22\ \mu\text{m}$ has been found previously to show a spatial variation in this region. The carrier(s) of this broad feature may be associated with the newly-formed dust grains post supernova explosion, however its origin is yet unclear.

We compare the spatial variation of this feature with the physical properties of molecular gas, indicated by the CO and ^{13}CO . Based on the comparison, we discuss the possible origin(s) of the $22\ \mu\text{m}$ feature and its association with the interstellar environments.