Dust Properties in HII regions

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Dust grains are an important constituent of the interstellar medium (ISM), playing a major role in a variety of processes, such as star and planet formation galactic extinction gas heating in cold environments and in the chemistry of gas in cold and dense regions. While the composition and properties of dust are well characterized in the diffuse ISM such properties are expected to change depending on the environment. New telescopes (Herschel and SOFIA) allow us to study the emission of dust grains in the infrared regime with high angular resolution. Here, we present observations towards bright compact HII regions from these telescopes and report our analysis of the physical properties of dust in the ionized gas, their surrounding photodissociation region (PDR) and molecular clouds. Our result indicate that dust is present inside the ionized gas, contributing to a large extent to the total infrared luminosity of the region. Such dust grains must have a different size distribution or optical properties in order to explain the size of the regions.