Dust observations with the new ALMA Band 1 receiver

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The ALMA Band 1 project will expand the Atacama Large Millimeter/submillimeter Array (ALMA) access to frequencies between 35 and 52 GHz for high angular resolution and sensitivity observations from the southern hemisphere. We show a summary of the more relevant Science Cases for the studies of dust in a wide range of environments. The main dust related science case for ALMA Band 1 is also an ALMA Level One Science: the study of the evolution of grains in protoplanetary disks. ALMA Band 1 will be able to resolve protoplanetary disks at the distance of the nearest star-forming regions and will allow us to follow the dust grain growth from mm-sized to cm-sized pebbles in protoplanetary disks and hopefully show where and when dust coagulation occurs. Observations of debris disks will also be possible, although more challenging than those for protoplanetary disks. Nonetheless, the combination of the ALMA 12-m array and the ACA will provide higher sensitivity to the low surface brightness emission from debris disks. Finally, the high sensitivity and angular resolution of ALMA Band 1 will allow us to study the spinning dust emission that it is related to the very small grain (VSG) population in the interstellar medium under conditions not possible to observe using mid-IR emission. ALMA observations will be crucial to differentiate the distinct environments where VSGs reside and how they relate to star forming and circumstellar regions.