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The Condensation of Gas-Phase Elements onto Interstellar Dust Grains

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Over the past 45 years, investigations of ultraviolet absorption features in stellar spectra have revealed that most of the heavy elements in the interstellar medium are depleted from the gas phase to values well below solar or B star reference abundances. The strengths of such depletions reveal the composition of dust grains in space, and they can be characterized by a limited set of parameters that are closely linked to the average gas densities and the condensation temperatures of the elements. Two outstanding mysteries remain: one is the fact that the depletion of oxygen exceeds that needed for forming silicates or metallic oxides, and the other is that the chemically inert element krypton shows some depletion. When we observe absorption features to derive the element abundances in distant galaxies, we must understand how to correct for depletions by using the patterns found in our Galaxy or the Small Magellanic Cloud as examples.

Consider for a poster?

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Session Classification: Non-stellar dust production and the dust cycle in the ISM

Track Classification: The creation and evolution of dust