

Over the past few decades, NASA missions have revealed that we live in a Universe that is not a hydrogen-dominated, physicist's paradise, but in a molecular Universe with complex molecules directly interwoven into its fabric. These missions have shown that molecules are an abundant and important component of astronomical objects at all stages of their evolution and that they play a key role in many processes that dominate the structure and evolution of galaxies. Closer to home in our galaxy, the Milky Way, they have revealed a unique and complex organic inventory of regions of star and planet formation that may well represent some of the prebiotic roots to life. Astrobiology emerges from the great interest in understanding astrochemical evolution from simple to complex molecules, especially those with biogenic potential and the roles they may play as primordial seeds in the origin of life on habitable worlds. The first part of this talk will highlight how infrared spectroscopic studies of interstellar space, combined with dedicated laboratory simulations, have revealed the widespread presence of complex organics across deep space. The remainder of the presentation will focus on the evolution of these materials and astrobiology.