INTERSTELLAR UREA [$(NH_2)_2CO$]

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In 1773, H. M. Rouelle's discovery of urea in human urine supported theories that organic chemicals could be modified by chemistry, but could only be produced through a vital force in living plants and animals[a]. The theory of Vitalism was badly damaged in 1828 when Friedrich Wöhler synthesized urea from inorganic starting materials. Indeed, urea was the first organic compound ever to be synthesized from inorganic compounds. Today, urea is thought to have played a significant role in prebiotic chemistry. Extraterrestrial urea was first detected in two samples of the Murchinson meteorite[b]. In this paper, we report the first detection of gas-phase interstellar urea [$(NH_2)_2CO$]. We used the BIMA[c] Array to detect urea emission from the hot molecular core Sgr B2(N-LMH) at λ = 3 mm ($9_{*,9}$-$8_{*,8}$, $9_{*,8}$-$8_{*,7}$, and $10_{*,10}$-$9_{*,9}$), and at λ = 1 mm ($20_{*,20}$-$19_{*,19}$, $20_{*,19}$-$19_{*,18}$, and $21_{*,21}$-$20_{*,20}$). We will compare the urea column density and distribution with those of other molecules of biological interest in Sgr B2(N-LMH).

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[a]Fairall 1996, http://smallfry.dmu.ac.uk/chem/mom/urea/urea.html

[b]Hayatsu et al. 1975, Geochim. et Cosmochim. Acta, 39, 471

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