

# Carbon isotopic enrichment in Titan's Tholins: implications for Titan's aerosols

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Since the discovery of the main composition of Titan's atmosphere, many laboratory experiments have been carried out to mimic its chemical evolution, and in particular the formation of the haze particles of this atmosphere. Indeed the solid products obtained during these simulation experiments – often named Titan's tholins – are supposed to be analogues of Titan's aerosols and many studies have already been achieved on these tholins. We have studied the possible isotopic fractionation of carbon during the processes involved in the formation of Titan's tholins, using tholins obtained from different simulation experiments. We will present the first results obtained on the isotopic ratios of  $^{13}\text{C}/^{12}\text{C}$  measured on the analogues of Titan's aerosols synthesized in laboratory. Measurement of  $\delta^{13}\text{C}$  leaded both on laboratory aerosols and on the initial gas mixture ( $\text{N}_2/\text{CH}_4$  (98:2)) used in the simulations doesn't show any evident deficit or enrichment of  $^{13}\text{C}$  in comparison with  $^{12}\text{C}$  in the aerosols synthesised, compared to the initial gas mixture. Preliminary retrieving of the data of the ACP instrument on the Huygens probe suggests that Titan's aerosols may present also no enrichment. This allows us to go further in the analyses of the ACP data in comparison with the first conclusions newly published in Nature (Israël et al., *Nature* 2005).