二、阅读 （3*5）

(1) Where adenine molecule synthesized, this latter molecule represents a constituent of DNA [1], RNA, and many coenzymes [2]. (2) However, there are literally two choices: is produced within the clouds themselves or is produced elsewhere and transported to the clouds. (3) Moreover, adenine and other products are probably responsible for life begin on Earth. (4) Whereas, numerous experiments have demonstrated that amino acids, nucleotides, carbohydrates, and other essential compounds form under simulated primitive earth conditions from simple starting materials, hydrocarbons, HCN, cyano compounds, aldehydes, and ketones [3,4]. (5) HCN, a high-energy prebiotic precursor, is produced in appreciable amounts. (6) The HCN pentamer adenine is one of the most abundant biochemical molecules.

(7) The abiotic synthesis of adenine from a solution of HCN and ammonia was first reported by Oró and colleagues in 1960 [5–8]. (8) Equally, the pentamerization of HCN will provide adenine in long processes formation [9–15]. (9) Adenine synthesis from HCN may occur in the gas phase because HCN has been detected in interstellar clouds [16]. (10) In previous works, we attempt to evaluating the mechanisms and processes of two, three and four HCN reaction [17,18] in order to highlight the possibility of oligomers formation in dense interstellar conditions in the gas phase, then wehave shown that each successive step, HCN dimerization and the sequential HCN additions to give dimer, trimer and tetramer is quite exothermic. (11) Moreover, we have been concluded that the production of such precursors in the gas phase necessity high-energy demand in Earth conditions, and that can do by the action of stars, electric discharges on simulated primitive atmospheres [17–19]. (12) Although, the reaction mechanisms involving several intermediates and transition states which are difficult to detect and identify experimentally, however can be studied effectively computationally. (13) These allow selection among various possibilities. (14) Our investigations have identified a plausible detailed step-by-step mechanism for the formation of adenine based on density functional theory computations. (15) Therefore, in this paper, we will study the adenine formation in the gas phase in dense interstellar clouds from the most stable tetramer HCN isomer [18], similarly the mechanism pathways of adenine formation will be evaluated and an accomplished kinetic study will be realized in order to investigate the possibility occurrence of adenine under interstellar conditions.