

**INTERSTELLAR COMMUNICATION:
CHEMISTRY AS A HIGHLY RECOMMENDED SUBJECT MATTER**

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The purpose of my paper is to face the problem of the "cosmic language" and the content of interstellar messages according to the policy of SETI program. In my previous paper (Ascheri, 2000) I suggested to adopt a methodology, already proposed by Vakoch (1998), consisting in the transmission of the spectra of the most widespread and important chemical elements, such as hydrogen, oxygen, carbon and azoth; in such a way the extraterrestrial civilization should be able to understand the "radio spectra language" and recognize the content as referring to something known.

Here I want to deepen my proposal using the same methodological approach. After having successfully transmitted the periodic table elements, the strategy would be that of sending the most important terrestrial molecules such as water and carbon composes. The transmission of water is quite clear an example; it may consist in sending directly the peculiar water's spectrum or, better, may be an alternative one, simpler to understand. The technique might be that of "building through addition" the chemical formulas sending the spectra of the molecule's constituents, as it follows: start of transmission - two spectra of hydrogen immediately followed by a spectrum of oxygen - end of transmission. When the "chemical dialogue" reaches an advanced stage, it would be very interesting to communicate about more complex molecules, such as glucose, adenine and so on, in order to know if these chemical aggregates are recognized and well known by extraterrestrials. The final target of this kind of communication would be to discover if the fundamental life-molecules, the monoacids and the proteins, and, in particular, if something like DNA and RNA, have a correspondence on an extraterrestrial environment. During this phase, the technical transmission may face probably some problems, due to the high level of information to send correctly, anyway the chemical spectra language should be made easier and faster by its use itself and the technological improvements, as it happens in the language of adult speakers.

The results of a chemical communication would be of the greatest significance for biochemistry and bioastronomy researches:

- * Scientists may understand how similar or different the two natural environments are, considering the kind of molecule found: terrestrial type, totally unknown, or currently died out on Earth;
- * Scientists studying the extraterrestrial chemical molecules may derive information about the physical conditions necessarily existing to let them be. Moreover they may understand if different extraterrestrial molecules may be developed as consequences of some phenomena, like high radiation and the greenhouse effects, present in initial forms also on the Earth;
- * Extraterrestrial discoveries may easily contribute to the study of evolution and diffusion of life in the universe and, perhaps, help to learn more about its origin.

Conclusions: If a communication with extraterrestrial intelligence might ever been possible, I believe that this proposal may be worth being attempted because it is focused on a subject really essential to understand the possibilities of extraterrestrial life: universe's chemistry. Meanwhile, it does consider the problem of transmission of content and the limits set by technology. The whole method would be an alternative to the current traditional projects of communication and, above all, it should be feasible by any radio-intelligent civilisation chemically educated.