Recent attention aroused by the reduction of carbon dioxide has as main objective the production of useful organic compounds and fuels - the “solar fuels” - in which solar energy would be stored. One route to this goal consists in first converting sunlight energy into electricity than could be further used to reduce CO₂ electrochemically. (1-4) Another approach is to directly use the visible photons and photocatalyze the reduction of the gas in the presence (or not) of an appropriate sensitizer and of a sacrificial electron donor. (5-9)

By using Fe based molecular complexes (including substituted tetraphenyl porphyrins and quaterpyridine complexes) we have recently found that it was possible to selectively and efficiently convert CO₂ with 2 electrons into CO (2-10), in both organic solvent and pure water, in electrochemical conditions as well as in photochemical conditions. Recently, we have discovered that the carbon dioxide could be reduced with 8 electrons to methane with a single molecular porphyrin catalyst. (11-12) Our most recent results will be presented and discussed.

12 M. Robert et al., submitted.

La presenza della S. V. sarà molto gradita.

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