Another Giant Leap for Mankind: Carbon Sequestering on Venus

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Abstract

This paper explores the hypothetical method and process of carbon sequestration on the planet Venus. Earth and Venus share many similarities, which gives Venus the potential to be as habitable as Earth. This is an opportunity that we as humans might need in the distant future. The atmosphere of Venus is primarily comprised of carbon dioxide. The sequestration of this toxic gas will be the first step in terraforming Venus. The use of peridotite, a coarse grained igneous rock, as a major raw material is the proposed method of sequestering the carbon dioxide. This is used because in its natural state, Olivine, the main component of peridotite, it is not at equilibrium, which causes it to react readily with carbon. Peridotite is currently being studied and applied in carbon sequestration here on Earth. There are two main methods of sequestration used on Earth, ex situ and in situ. Both processes produce a solid carbonate that effectively and safely stores carbon dioxide for thousands of years. The conditions on both Venus and Earth are conducive to the formation of peridotite, which provides sufficient evidence that there might be peridotite in the mantle of Venus. There might also be peridotite in xenoliths produced by volcanic eruptions. At the present time there is not enough technology or resources to carry out the sequestration of carbon on Venus.