## **Project MEFT Workshop (2nd Edition)**



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## Plasma in-situ production of fuels and oxygen on Mars

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Sending a manned mission to Mars is one of the next major goals in space exploration. Since travelling to the Red Planet is a challenging endeavour, a justified interest has emerged in *in-situ* resource utilisation (ISRU) on Mars, with the possibility of harnessing local abundant atmospheric CO2 and converting it into breathable oxygen (O2) for a future outpost and carbon monoxide (CO), to be used in rocket propellant production. Martian atmosphere favours the vibrational excitation and subsequent up-pumping of the asymmetric stretching mode, which constitutes a key factor for an energy-efficient plasma dissociation, making plasma technology a strong candidate to perform the CO2 conversion. The aim of this project is to characterize the plasma discharge experimentally and develop a self-consistent kinetic model for the ternary CO2/N2/Ar Martian mixture.

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