

Mars mission could ease Earth's energy supply crisis

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Techniques and instrumentation initially developed for ExoMars - Europe's next robotic mission to Mars in 2016 - but now due to fly on a NASA mission in 2018, could also provide the answers to the globally pressing issue of energy supply.

A major study by the Imperial College London, funded by the Science and Technology Facilities Council (STFC), aims to use this new technology as an inexpensive and efficient way to help process unconventional energy resources, potentially having an enormous impact on the UK and global economy.

Professor Mark Sephton from Imperial's Department of Earth Science and Engineering, said: "The research involves using extraction-helping materials, called surfactants, to liberate organic matter from rock in space to gain a deeper understanding into the biological environment on Mars. We aim to show that the same technique could also be used to recycle the prodigious amounts of water necessary to process tar sand deposits and turn them into conventional petroleum."

Usable energy resources are essential to the [global economy](#). Conventional crude oil is a staple energy resource and accounts for over 35% of the world's [energy consumption](#). As the demand for oil exceeds supply, focus has now turned to trying to tap unconventional fossil fuels, such as tar sands. However, these unconventional fossil fuels must be extracted and upgraded to match the characteristics of more conventional oil deposits and make them commercially viable. The

extraction process requires substantial amounts of water which is then left contaminated for extended periods of time. In just hours, the new technology can strip this water of its oily contaminants, removing a bottleneck in the refining process.

“Our new technology is an inexpensive approach that can be used to reduce the water demand during treatment of this type of unconventional hydrocarbon deposit,” said Professor Sephton. “Moreover, these extraction helping materials are environmentally harmless to the extent that they are edible. Our research at Imperial College combines first rate scientific investigation with practical engineering design.”

Dr Liz Towns-Andrews, Director of Knowledge Exchange at STFC, which is funding the study through its Knowledge Exchange Follow on Fund award scheme, added, “This is a truly valuable study which will not only reveal more about our neighbour Mars, but could also deliver enormous benefits here on Earth. The new research is a direct solution to our worsening energy supply crisis and is a great example of the seamless interaction of pure and applied science with engineering to solve real world environmental and commercial issues. Professor Sephton’s work is well aligned with the current needs of industry and we believe that this ambitious project could be of great benefit to the UK economy.”

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