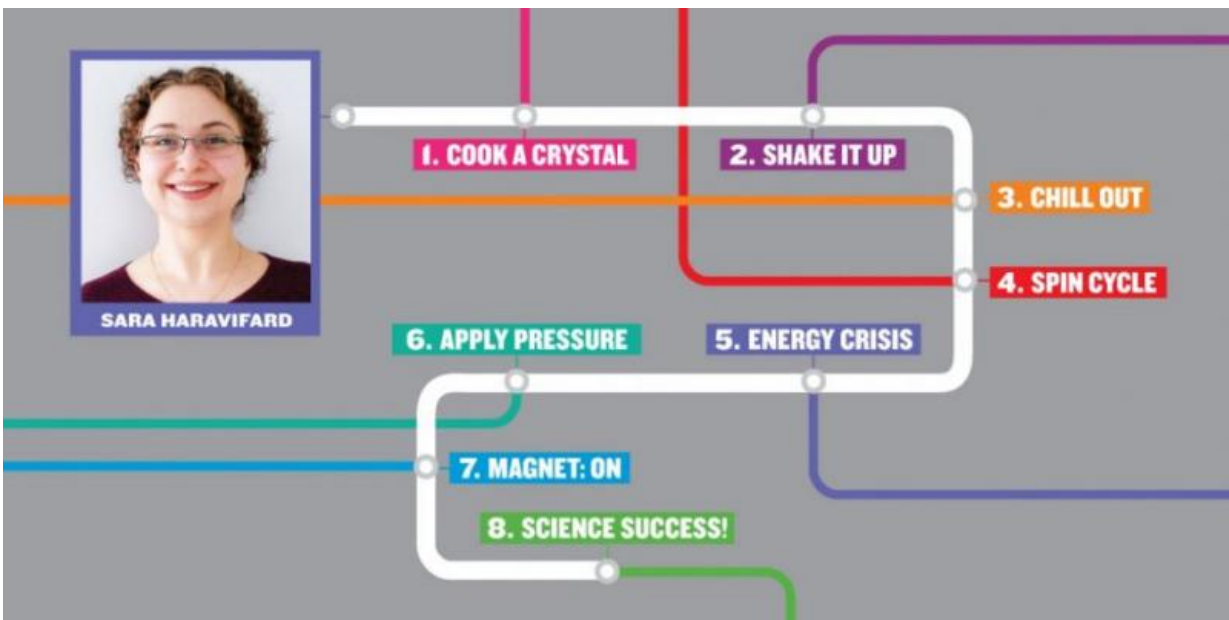


# Cooking up 'frustrated' magnets in search of superconductivity

June 13 2017, by Kara Manke



A simplified version of Sara Haravifard's recipe for new superconductors, by the National High Magnetic Field Laboratory. Credit: Duke University

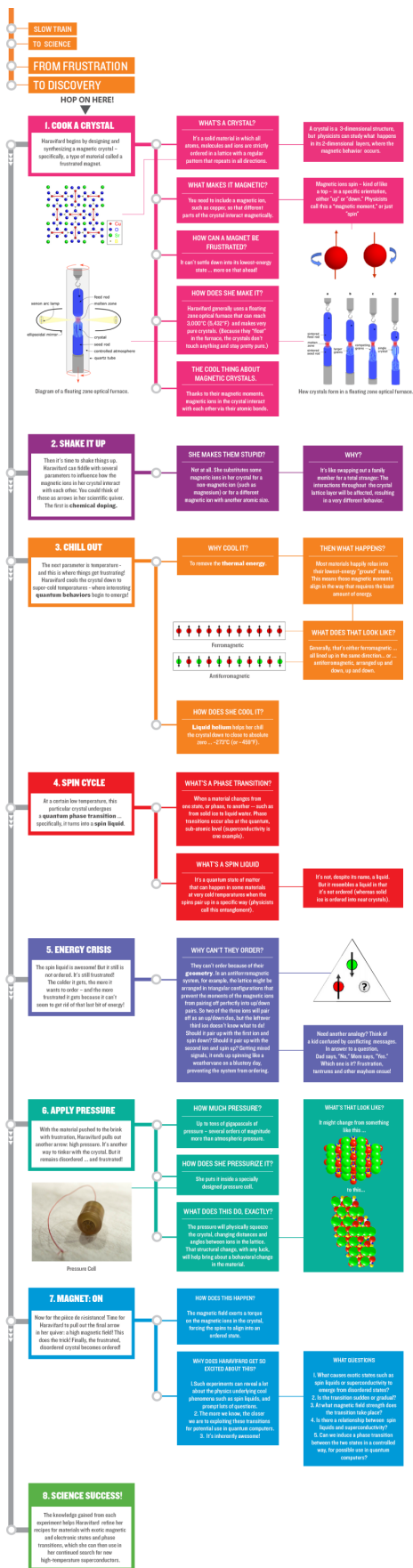
Duke physics professor Sara Haravifard is mixing, cooking, squishing and freezing "frustrated" magnetic crystals in search of the origins of superconductivity.

Superconductivity refers to the ability of electrons to travel endlessly through certain materials, called superconductors, without adding any

energy—think of a car that can drive forever with no gas or electricity. And just the way gas-less, charge-less cars would make travel vastly cheaper, superconductivity has the potential to revolutionize electronics and [energy industry](#).

But superconductors are extremely rare, and are usually only superconductive at extremely cold temperatures—too cold for any but a few highly specialized applications. A few "high-temperature" superconductors have been discovered, but scientists are still flummoxed at why and how these superconductors exist.

Haravifard hopes that her magnet experiments will reveal the origins of [high-temperature superconductivity](#) so that researchers can design and build new materials with this amazing property. In the process, her team may also discover materials that are useful in quantum computing, or even entirely new states of matter.



Credit: National High Magnetic Field Laboratory

Provided by Duke University

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