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Looking Inside Minerals using Sodium Nuclei and Nuclear Magnetic Resonance

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Looking Inside Minerals using Sodium Nuclei and Nuclear Magnetic Resonance

I'm Stephen Pilar from the department of Earth Sciences, and I'm using NMR spectroscopy to peer into rocks and minerals to learn about fluids that have been trapped inside. These fluids can be millions of years old if the rocks have remained undisturbed since their formation. With NMR spectroscopy, whole samples can be analyzed all at once, not just the surface. This makes it useful for geological applications where samples may be difficult to prepare or where the material may be opaque and difficult to study optically. If successful, NMR spectroscopy may offer another way to determine the salt concentration within a mineral's fluid pockets and may also offer insight into the amount of pressure that was present when the mineral was formed. Formation conditions such as pressure and fluid composition are a vital part of understanding geological processes and NMR may offer a new way of exploring these conditions.



A colourful variety of natural halite samples being studied

