Research Highlights

THE AUSTRALIAN NATIONAL UNIVERSITY

ANU Materials Science Questions Pedigree of Martian Bugs?

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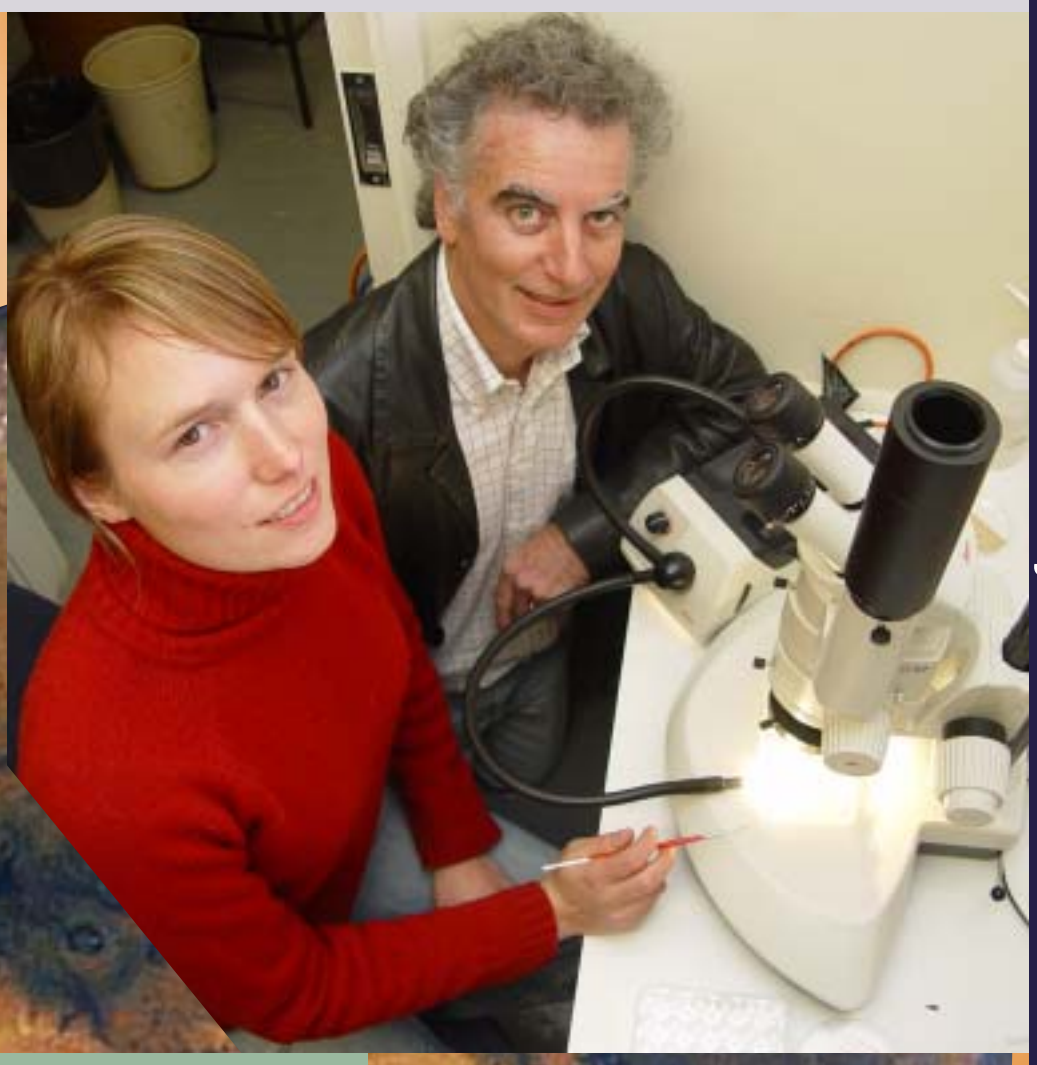
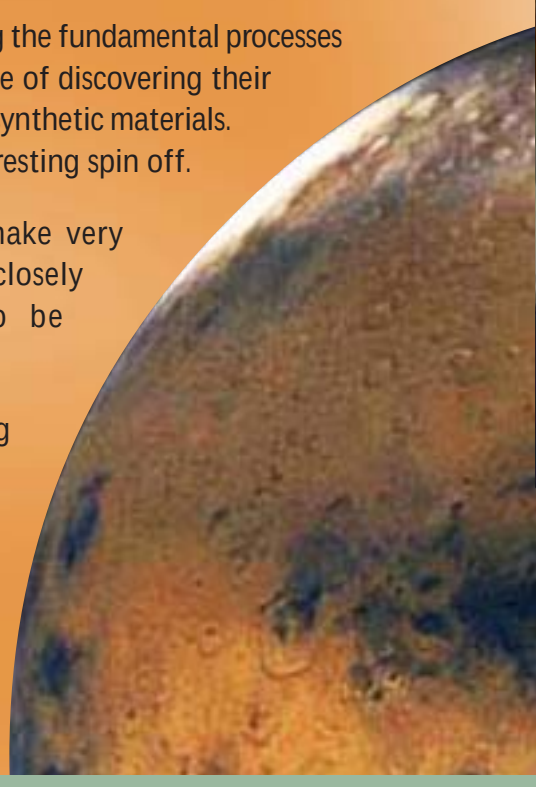
There is no doubt that materials made within living organisms remain far more advanced than the most lauded "advanced materials" humans can synthesize in the lab. It has been pointed out years ago, and remains true today, that a humble blade of grass far exceeds any synthetic material in its resistance to fracture and ability to withstand extreme stresses without failure.

Scientists at the ANU have been studying the fundamental processes behind biological structures in the hope of discovering their secrets and applying them to advanced synthetic materials. However this work has also had an interesting spin off.

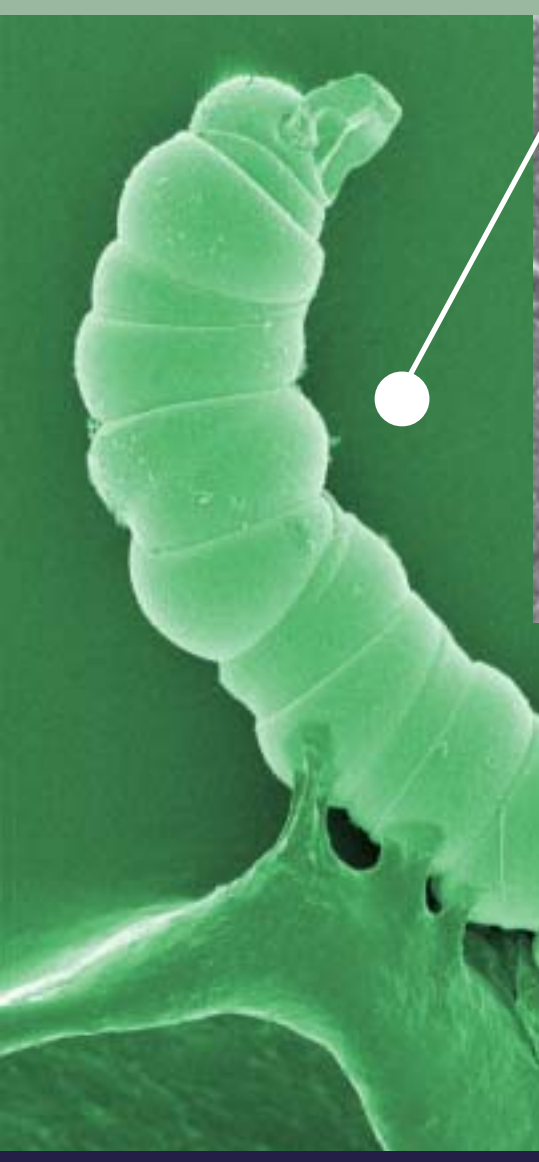
ANU scientists have been able to make very complex structures in the lab that closely resemble what were assumed to be microfossils in natural rock.

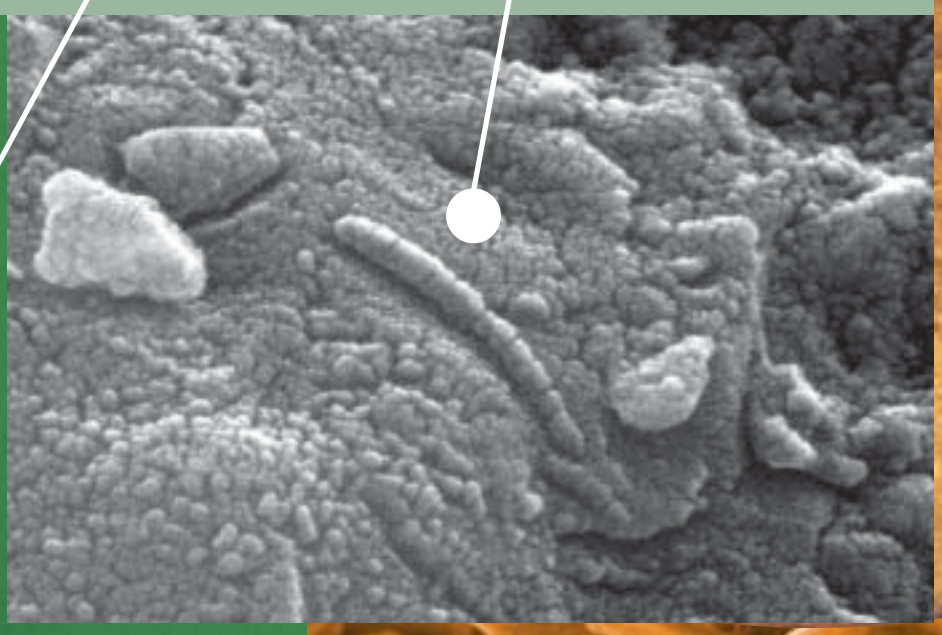
The syntheses are very simple, requiring only a source of carbonate ions (e.g. atmospheric CO_2), strong alkaline aqueous solutions, silica and rare earth cations (Ba and Sr, Ca at high T) - all common ingredients in early planetary formation.





Dead or Alive? Synthetic silicate & fossil from Mars





This discovery has profound implications for our understanding of early life on earth. It also casts a different light on worm like structures in the Martian meteorite found in Antarctica. The ANU synthetic silicates bear an uncanny similarity to the Mars microbe!

Research School of Physical Sciences and Engineering