nature communications

View all journals

Q Search

Log in

Explore content >

About the journal ∨

Publish with us >

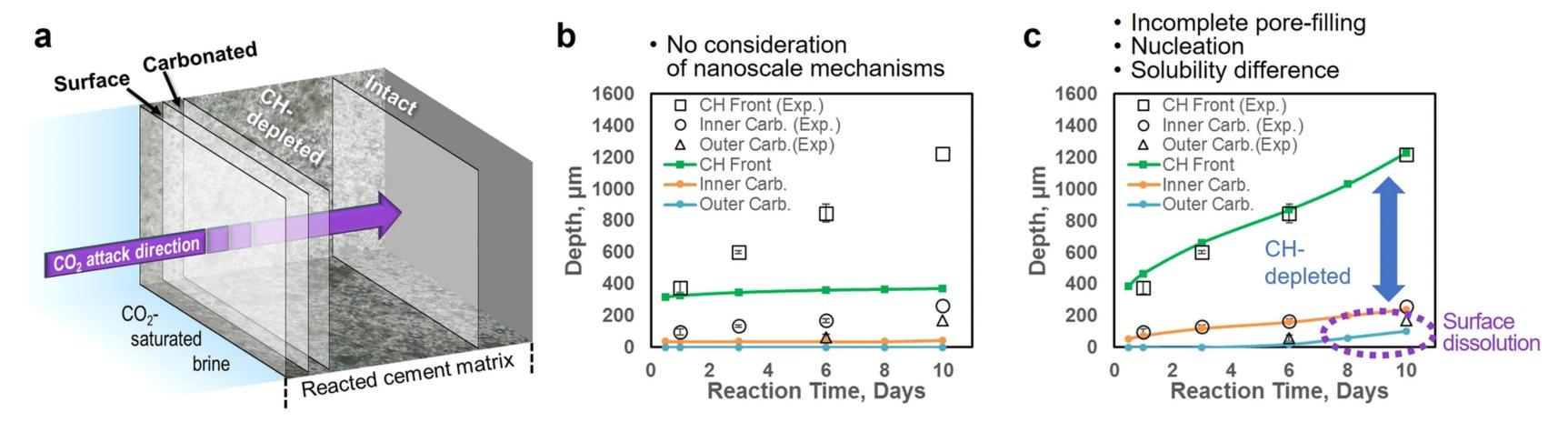
Sign up for alerts igoplus

**RSS** feed

nature > nature communications > perspectives > article > figure

## Fig. 7: Incorporation of nanoscale interfacial reactions into a reactive transport model.

From: Bridging molecular-scale interfacial science with continuum-scale models



a Illustration of direction of  $CO_2$  attack into the cement matrix. The cement samples were reacted in a  $CO_2$ -saturated brine (0.5 M NaCl) with a solid-to-liquid volumetric ratio of 1/16. The solution was equilibrated at 95 °C under  $100 \pm 5$  bar of  $CO_2$ . A total alteration thickness of  $1220 \pm 90$  µm was observed, including a 960 µm CH ( $Ca(OH)_2$ , portlandite)-depleted zone, a 100 µm carbonated layer, and a 170 µm surface region. Interfaces between zones are drawn to scale. **b**, **c** Modeling results with and without sufficient consideration of nanoscale mechanisms in comparison with experimental data. **b** Results with no consideration of nanoscale mechanisms. **c** Results with consideration of incomplete filling of pore space at nanoscale, nucleation kinetics, an enhanced solubility in confined pores. By incorporating nanoscale evolution of interfacial chemistry into RTM can generate a better match with experimental observations. Adapted with permission from American Chemical Society from ref.  $\frac{69}{2}$ .

Back to article page >

Nature Communications (Nat Commun) | ISSN 2041-1723 (online)

About Nature Portfolio	Discover content	Publishing policies	Author & Researcher services
About us	Journals A-Z	Nature portfolio policies	Reprints & permissions
<u>Press releases</u>	Articles by subject	Open access	Research data
Press office	protocols.io		<u>Language editing</u>
Contact us	Nature Index		Scientific editing
			Nature Masterclasses
			Research Solutions
Libraries & institutions	Advertising & partnerships	Professional development	Regional websites
<u>Librarian service &amp; tools</u>	<u>Advertising</u>	Nature Careers	<u>Nature Africa</u>
<u>Librarian portal</u>	Partnerships & Services	Nature Conferences	Nature China
<u>Open research</u>	Media kits		Nature India
Recommend to library	Branded content		<u>Nature Italy</u>
			<u>Nature Japan</u>
			Nature Middle East
Privacy Policy Use of cookies Y	<u>four privacy choices/Manage cookies</u>	<u>Legal notice</u> <u>Accessibility statement</u>	Terms & Conditions