
Geology - Sedimentary Geology; New Sedimentary Geology Findings Has Been Reported by Investigators at University of Texas Austin [Quartz Types In the Upper Pennsylvanian Organic-rich Cline Shale (Wolfcamp D), Midland Basin, Texas: Implications for Silica Diagenesis, Porosity ...]

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2020 JAN 31 (NewsRx) -- By a News Reporter-Staff News Editor at Science Letter -- Fresh data on Geology - Sedimentary Geology are presented in a new report. According to news reporting from Austin, Texas, by NewsRx journalists, research stated, "The origin and form of quartz in mudrocks has significant implications for interpretation of depositional environments, diagenetic pathways, mechanisms of porosity reduction and rock mechanical-property evolution. Quartz types in the Upper Pennsylvanian Cline Shale, Midland Basin, Texas, were examined using a combination of field-emission scanning electron microscopy-based energy-dispersive spectroscopy elemental mapping (to determine mineralogy) and scanning electron microscopy-based cathodoluminescence imaging (to determine quartz types) with the goal of elucidating a high-resolution imaging protocol at the micrometre scale for shale petrology."

Funders for this research include State of Texas Advanced Resource Recovery (STARR) program at the Bureau of Economic Geology (the Bureau), China Scholarship Council, Geological Society of America (GSA) Graduate Student Research Grant.

The news correspondents obtained a quote from the research from the University of Texas Austin, "Also, the unconfined compressive rock strength of shale samples with contrasting proportions of different quartz types was measured using Equotip Bambino analyses. The results suggest that extrabasinal detrital quartz, which accounts for an average of 26 vol.% of the rock in all analyzed samples, is the dominant form of quartz in the Cline Shale. The intergranular clay-size microquartz, which accounts for an average of 10 vol.% of the rock in all analyzed samples, is the dominant form of authigenic quartz. Dissolved radiolarians and sponge spicules are likely sources of silica for clay-size microquartz and other authigenic quartz showing pale-mauve to dark greyish cathodoluminescence colour. Some authigenic quartz in the form of intragranular pore filling and mollusc skeletal replacement displays bright-reddish cathodoluminescence colour, which may be associated with silica released at a different time in the rock's diagenetic history, such as during smectite illitization. Porosity reduction in the Cline Shale predominantly resulted from compaction because of extremely low intergranular volume and the general lack of early cementation. Quartz form significantly impacts rock mechanical properties in the Cline Shale: widely distributed intergranular clay-size microquartz cement is a major factor controlling rock strength."

According to the news reporters, the research concluded: "This correlation also applies to other mudrock successions of various geological ages, tectonic histories and lithologies."

For more information on this research see: Quartz Types In the Upper Pennsylvanian Organic-rich Cline Shale (Wolfcamp D), Midland Basin, Texas: Implications for Silica Diagenesis, Porosity Evolution and Rock Mechanical Properties. *Sedimentology*, 2020;(): . *Sedimentology* can be contacted at: Wiley, 111 River St, Hoboken 07030-5774, NJ, USA. (Wiley-Blackwell - www.wiley.com/; *Sedimentology* - [onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1365-3091](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-3091))

Our news journalists report that additional information may be obtained by contacting J.W. Peng, University of Texas Austin, Bur Econ Geol, Jackson School of Geosciences, Austin, TX 78713, United States. Additional authors for this research include K.L. Milliken and Q.L. Fu.

Keywords for this news article include: Austin, Texas, United States, North and Central America, Sedimentary Geology, Geology, Quartz, Silicon Dioxide, University of Texas Austin.

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