

18-30 BTH 30 Carnicle, Melissa M.

A POSSIBLE LATE PALEOZOIC NOVACULITE DEPOSIT IN THE PARANA BASIN,
WITMARSUM PARANA STATE, BRAZIL

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Novaculite is a specific type of cryptocrystalline quartz found in the Ouachita Mountains of Arkansas and Oklahoma and in the Marathon Uplift of Texas. Novaculite probably formed as a siliceous ooze in the Devonian Period and was metamorphosed into chert during the Ouachita Orogeny. Novaculite is a dense rock that is resistant to weathering. Native Americans mined Novaculite for sharpening stones, arrowheads and spear points and it is used commercially today as a whetstone.

A cryptocrystalline siliceous unit that resembles Novaculite was first found by Trosdorff (2002) during mapping of Late Paleozoic glacial units in the southeastern Parana Basin near Witmarsum, Parana State, Brazil. The goal of this study is to compliment the efforts of researchers of the Instituto de Geociências, USP (e.g. Harabari; 2009 and Garcia; 2009) to determine if the Brazilian deposit is Novaculite sensu stricto. Fieldwork for this study consisted of detailed mapping Paleozoic units, description of possible Novaculite outcrops and sample collection. Lab work consisted of making thin sections and thin section analysis, XRD analysis and sample preparation for XRF analysis.

Field evidence suggests that the Brazil deposit is not Novaculite sensu stricto. At the time of deposition, the southern Parana basin was characterized by a high influx of terrestrial glacial and glacio-fluvial sediments. A siliceous ooze in contrast, only forms in sediment starved environments. Additionally, bedding and contact features indicate a rapid, contemporaneous accumulation of the siliceous unit and glacial units. Both U.S.P. research and this study indicate that an alternative model for the origin of the Parana Basin siliceous unit may be volcanic tephra. However, a specific volcanic source is difficult to identify even though tephra are known throughout the Parana Basin. Geochemical analysis should provide additional insight on the origin of this unique deposit.

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18-31 BTH 31 Werts, Kevin

FIELD RELATIONSHIPS AND ZIRCON TEXTURES CONSTRAIN RELATIVE TIMING OF PERALUMINOUS MAGMATISM AND METAMORPHISM IN THE RUBY MOUNTAINS, NEVADA

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The Ruby Mountain-East Humboldt Range metamorphic core complex (northeast Nevada) experienced multiple periods of protracted peraluminous magmatism between 160 and 29 Ma. Zircons from many of the granitic rocks have discordant ages leading to conflicting models for magma generation and the magnitude and duration of partial melting events. A detailed map of a complex poly lithological outcrop with clearly defined crosscutting relationships located near Liberty Pass was prepared to better constrain the relative timing relationships between different magmatic events. Accessory minerals from a pegmatitic muscovite granite gneiss were characterized using back scatter electron (BSE) and cathodoluminescence (CL) imaging. The pegmatitic gneiss represents the geochronologically most complex lithology in the core complex and is an important key to establishing the nature, duration and timing of magmatism between ~90 and ~40 Ma. The complexity is reflected in zircon separated from the gneiss. Based on morphology, there are at least three populations of individual zirconic grains characteristic of igneous crystallization: elong-