

## Black Shales Outcrops in Malaysia: Occurrence and Geological Setting

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**Abstract :** Paleozoic, Mesozoic and Cenozoic black shales that can be a potential source of energy and precious metals are widely distributed in Malaysia Peninsula, Sarawak and Sabah. Two Paleozoic black shales outcrops were reported in the Langkawi Island belonging to the Cambrian fluvial Machinchang Formation and the Silurian glaciomarine Singa Formation. More the seventeen occurrences of Paleozoic black shales outcrops have been found in the Peninsular Malaysia that range in age from Devonian, Carboniferous, and Permian in the Terengganu, Perlis, Pahang, and Perak States. Mesozoic black shales outcrops occur in several places in both the Peninsular Malaysia and Sarawak. In the Peninsular Malaysia, Triassic black shales occur in the Nami area, Northern Kedah and in the Pahang area. In Sarawak, Triassic black shales have been reported in the Bau area. Cenozoic black shales outcrops were reported in both Sarawak at Miri area and Sabah at the Ranau and Tenom areas. Preliminary mineralogical and geochemical investigations on some of these black shales outcrops showed distinct compositional variations among these black shales outcrops probably due to variations in their source area composition and/or depositional and diagenetic settings of these shales. Some of these shales also subjected to post-depositional hydrothermal mineralization that enriched these shales with Au-bearing minerals such as pyrite, chalcopyrite, and arsenopyrite. Many of the studied black shales outcrops look rich in organic matter, which increase the possibility of using these black shales as an unconventional energy resource.

**Keywords :** black shales, energy, mineralization, Malaysia

**Conference Title :** ICESRE 2015 : International Conference on Earth Science and Resource Engineering

**Conference Location :** Singapore, Singapore

**Conference Dates :** March 29-30, 2015