**Photomicrograph atlas of New Albany Shale organic matter**

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The New Albany Shale (NAS) is an organic-matter-rich formation of Upper Devonian and Lower Mississippian age in the Illinois Basin of the United States. The unit extends through the states of Illinois, Indiana, and western Kentucky and is correlative with the Antrim Shale of the Michigan Basin and the Ohio Shale of the Appalachian Basin.

The NAS is a marine kerogen Type II sequence that has a thickness ranging from less than 6 to 140 m (<20 to 460 ft) and depth from 0 to 1,585 m (5,200 ft) in the central part of the basin. Principal rocks are brownish-black organic-matter-rich shale, greenish-gray shale, dolostone, and siltstone. The rocks have organic carbon contents that range from approximately 0.1 to 20%. The NAS spans a thermal maturity range corresponding to vitrinite reflectance (Ro) values of between less than 0.50% closer to basin margins to 1.50% in the southern part of the basin in Illinois. As suggested in previous studies, thermal maturity in some areas may be higher than indicated by Ro values because vitrinite reflectance is suppressed. Organic matter of the NAS is dominated by alginite (mostly *Tasmanites*), amorphous organic matter (amorphinite), and liptodetrinite. Vitrinite and inertinite are typically rare, and solid bitumen content is variable.

The Indiana Geological Survey has conducted several New Albany Shale projects and has accumulated an abundance of NAS samples and photomicrographs of the organic matter in reflected and fluorescent light. Until now these images have not been published or made publicly available; they are, however, a useful resource for researchers and industry. We are developing a free online application that will be a comprehensive digital compilation of photomicrographs of the organic matter of the New Albany Shale and its members. It will allow users to interactively search and explore these data. Currently the atlas contains 460 microphotographs of samples from 26 locations. Most of the images are from Indiana's portion of the Illinois Basin; however, samples from Illinois and Kentucky will be obtained in the near future as part of an ongoing collaborative effort with the Illinois and Kentucky State Geological Surveys. These samples will be photographed, described, and added to the atlas.

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