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## How Ion Milling Does or Does Not Alter Organic Matter

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Ion milling is increasingly used in unconventional petroleum research as a superb method of sample surface preparation for scanning electron microscopy (SEM) to provide high-resolution imagery needed for studying the nanoscale structure of rocks. This method has provided new insight into nanostructural properties within the organic matter (i.e., organic porosity) as an important reservoir control factor in tight rocks. Ion milling applies bombardment of the sample surface by ions (e.g., Gallium, Argon) resulting in the formation of kinetic heat energy on the milled surface of the rock. While this technique provides a spectacular surface for studying the fine structures, Sanei and Ardakani (2016) applied optical properties of OM (reflectance and fluorescence spectrometry) to measure the degree of aromatization of organic molecules, caused by thermal alteration. They first reported a possibility of organic matter (OM) alteration as the result of this heat transfer to the surface of OM during the milling process. Since then, there have been several conflicting reports in the recent literature using varieties of methodologies. This presentation will discuss the latest state of knowledge on the potential alteration of OM using ion milling method and the implications for the reservoir characterization studies of tight rocks.

### References

Sanei, H.; Ardakani, O.H., (2016) Alteration of organic matter by ion milling. International Journal of Coal Geology. Volume 163, 1 June 2016, Pages 123-131