
Modification of the Acetic Acid Methodology for Improved Microfossil Extraction to Meet Requirements of the Oil and Gas Industry

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EXTENDED ABSTRACT

Utilizing acetic acid for the extraction of microfossils from indurated carbonate rocks has been successful and productive in relevant academic research studies. Academic researchers demonstrated that acetic acid could be utilized to extract calcareous microfossils (e.g., planktonic foraminifera) from indurated micrite (Lethiers and Crasquin, 1988; Tur et al., 2001). These studies targeted one type of lithology mostly from surface outcrop samples. They modified the acetic acid methodology based on a specific lithology and group of calcitic or calcified microfossils.

In 2013 at Ellington and Associates, Inc. (now ALS Oil & Gas Reservoir Laboratories), micropaleontology laboratory, the acetic acid methodology was tried on oil and gas industry biostratigraphic samples in an attempt to improve fossil recovery from a variety of rock lithologies collected from subsurface ditch cuttings and core samples. Conventional fossil extraction techniques produced poor fossil recovery from many lithologies. To obtain the better recovery and results for industry needs in terms of diversity and abundance, many physical and chemical modifications were applied to the acetic acid methodology published to extract calcified radiolarians from micritic nodules (Kariminia et al., 2004).

This paper demonstrates that modification of the acetic acid methodology based on lithology and fossil type, can produce superior fossil recovery in terms of preservation (Fig. 1) and, abundance and diversity (Figs. 2 and 3). As a result, this new methodology meets industry requirements and helps solve difficult geologic problems that previously were complicated or impossible to resolve.

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