ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 6, Issue, 4, pp.3471-3473, April, 2015

International Journal of Recent Scientific Research

RESEARCH ARTICLE

SORTING, ROUNDNESS AND MATRIX AS ENVIRONMENTAL INDICATOR OF SERIKAGNI FORMATION, SINJAR SECTION, WEST MOSUL, NORTH IRAQ

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ARTICLE INFO

Article History:

Received 5th, March, 2015
Received in revised form 12th, March, 2015
Accepted 6th, April, 2015
Published online 28th, April, 2015

Key words:

ABSTRACT

Serikagni Formation has been studied at type locality section that cropping out on Sinjar anticline, west Mosul. 150 samples was thinned section and studied petrographically, mineralogy, texture and organic components under polarized microscope. Sorting, roundness and matrix of Serikagni Formation refers to high, transitional and low zone of water energy at deposional environment.

INTRODUCTION

Serikagni Formation was first described by Bellen, *et al*., (1959) near village of Bara, about 4 km west Sinjar town on Sinjar anticline, west Mosul city (Fig. 1). Its consists of globIgerinal chalky limestone with few calcareous bands. It's thickness reaches to 150 meters and underlined by Jaddala Formation unconformably and overlies by Dhiban anhydrite Formation conformably and gradationally (Bellen, *et al*., 1959).

Its deposited at typical off- shore basinal environment according to it's interbedded of limestone, marly limestone, globigerinal foraminefral components (Yousif, 1987); (Khuder, 1983) ; (Maarouf, 1987) ; (Abid, 1997) and ostracoda (Yazdin, 1990). Its subdivided into five petrographic units, and its thickness increases east ward to 300 meters (Maala, 1977). The age of the formation is Oligocene- Early Miocene (Yousif, 1983) ; (Hani, 1997) or early Miocene (Amer, 1977) ; (Maala, 1977) ; (Abid, 1991). This study aimed to use sorting, roundness and matrix as environmental indicater.

MATERIALS AND METHODS

150 samples has been collected according to the petrographic changes and thinned section from Sinjar section on Sinjar anticline, and studied optically by transmitted polarized microscope to identify petrography, mineralogy, textural components (sorting, roundness and matrix), and organic components.

RESULTS AND DISCUSSION

Serikagni Formation consists of globigerinal chalky limestone and marl with micritic matrix, the later sometimes changes to sparite by diagenesis processes. The main diagenetic mineral is pyrite, and usually has grain shape plate (1) or filled chambers of globigerina plate(2). Pyrite grows at chamber of planktonic foraminifera during primary diagenetic processes (Brite, 2001); (Berner, 1970) under reducing environment enriched by organic matters (Engelhardt, 1977). Some pyrite mineral oxidized and change to hematite.

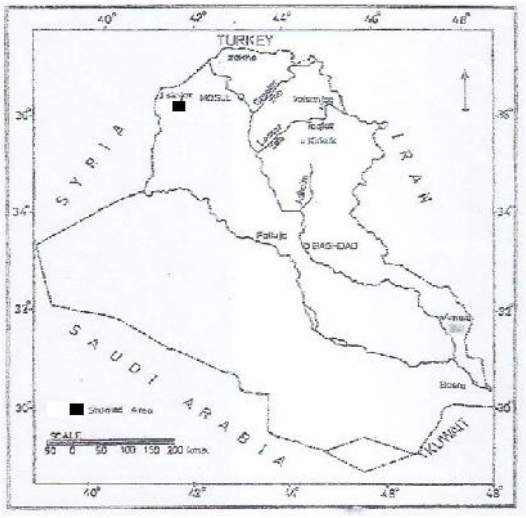

Fig.1 Location map of studied area.

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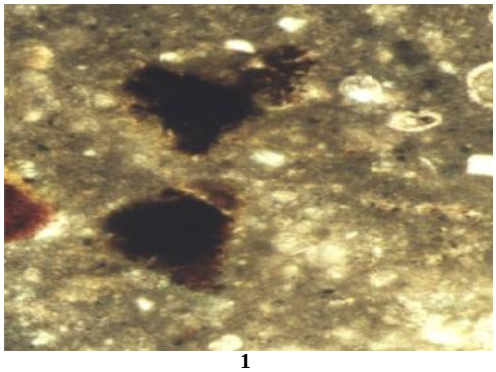
Energy of water: the difference of water energy produces much type of textures and lithologic type, i.e. the classification of carbonate rocks depends on water energy, wave and current speeds that effected on environments of deposition (Plumley, 1962).



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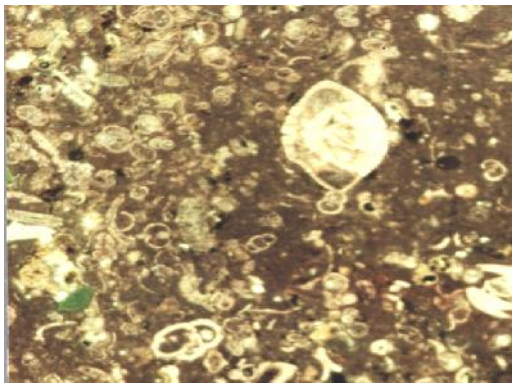

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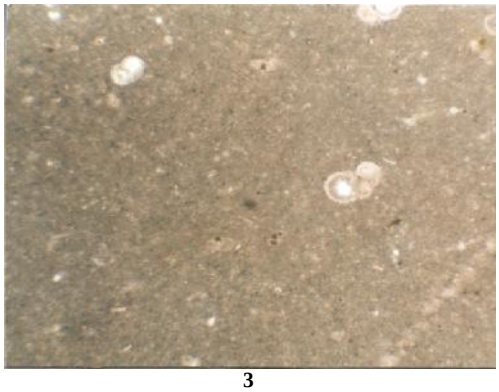

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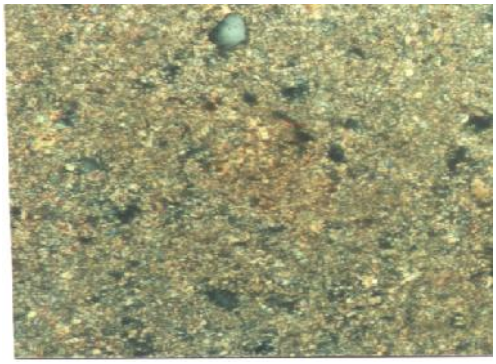

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1. Pyrite grains of Serikagni Formation. 100x
2. Globigerinals chamber filled by pyrite. 40x
3. Planktonic foraminifra on micrite matrix. 100x
4. Diagenesis of micrite to microsparite. 100x

Water energy of depositional environment of Serikagni Formation can be subdivided according to sorting, roundness and matrix (Folk, 1962) into three zones: high energy, transitional and low energy zone (Fig.2).

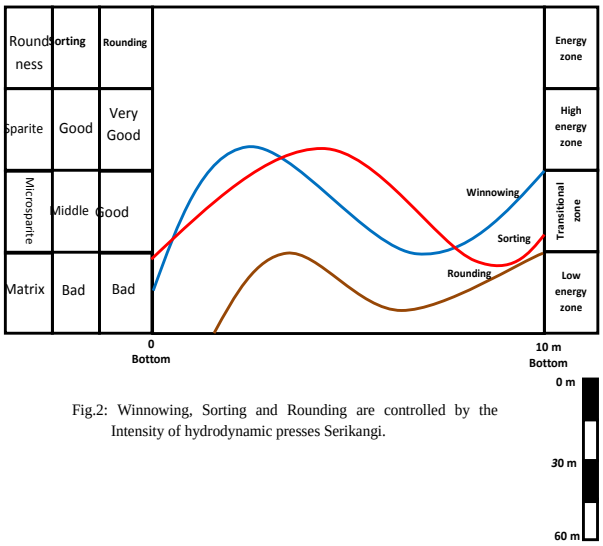

Fig.2: Winnowing, Sorting and Rounding are controlled by the Intensity of hydrodynamic presses Serikangi.

High energy zone: characterized by high intensity of waves and currents, winnowing of micrite to form sparite of very good sorted very high roundness and sphericity plate(1) Very high intensity of waves and currents breaks some grains to reduce sorting and sphericity. Presence of sparite refers to high energy environment of deposition (Bourrouilh, 1998).

Transitional energy zone: composed of microspar, micrite, and grains have good sorting and good sphericity plate (3), that refers to local energy and partially winnowing of micrite.
Low energy zone: composed of bad sorting and bad sphericity plate (4), which refers to low speed of water.

CONCLUSIONS

Serikagni Formation divided into three water areas and this has been shown through energy curves whih in turn depends on grain size,sorting and matrix . The formation is mainly precipitates in quiet deep water.

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How to cite this article:

Saadi Khan Jane and Aqeel Abbas Al- Zubaidi., Sorting, Roundness And Matrix As Environmental Indicator Of Serikagni Formation, Sinjar Section, West Mosul, North Iraq. *International Journal of Recent Scientific Research Vol. 6, Issue, 4, pp.3471-3473, April, 2015*

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