

THE IMPRESSION OF WATER, SALINE WATER AND NaCl ON NATURAL GAS AND LIGHT HYDROCARBONS GENERATED FROM *n*-TETRACOSANE PYROLYSIS

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Pure *n*-tetrocosane model compound was respectively pyrolyzed without anything, with pure water, three kinds of saline water (the salinity is respectively 3, 10 and 25%) and pure sodium chloride at the constant temperature of 370°C and under the constant pressure of 21MPa in a close system from 1 to 14 days. The yields of gaseous and liquid light hydrocarbons are different for the different filling materials. Here the yields of methane were used as an example to illuminate the differences (Figure 1). The yields of methane increase with retention time increasing. The yield of methane generated from pure *n*-tetracosane is the lowest. The yield of methane generated from *n*-tetracosane with pure NaCl is similar to that generated from pure *n*-tetracosane pyrolysis. The yield of methane generated from *n*-tetracosane with 3% saline water is the highest. The higher the salinity, the yield of methane is lower. But the yield of methane generated from *n*-tetracosane with pure water is a little higher than that of generated from *n*-tetracosane with 10% saline water. So the saline water can increase the yields of natural gas generated from oil pyrolysis and the yields are correlation with the salinity of the water. The light hydrocarbons have a similar feature to that of natural gas. In some oilfields in Tarim basin there is a large amount of condensed oil in the reservoir. It is difficult to give a reasonable explanation to its formation. The results of our experiment perhaps give a possible explanation. It is that the condensed oil in the reservoir is generated from petroleum pyrolysis and a large amount of water with a low salinity perhaps appears in the process of petroleum pyrolysis.

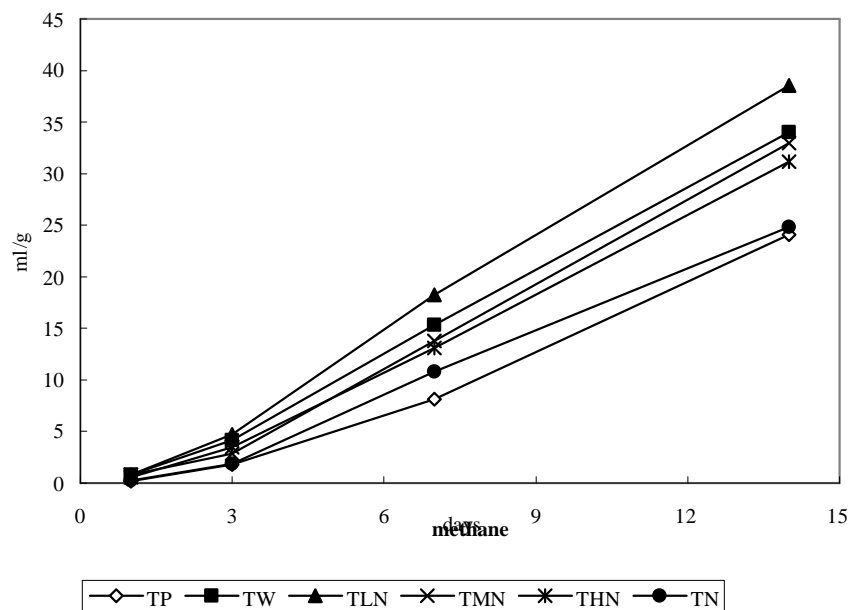


Figure 1. The yields of methane generated from *n*-tetracosane pyrolysis against retention time. Note: TP represents pure *n*-tetracosane without anything; TW represents *n*-tetracosane with pure water; TLN represents *n*-tetracosane with 3% saline water; TMN represents *n*-tetracosane with 10% saline water; THN represents 25% saline water; TN represents *n*-tetracosane with pure NaCl. The ratio of *n*-tetracosane/pure water (or saline water and pure NaCl) is 1:1.