

## **Significance of Solid Bitumen for Petroleum System in High Evolution Area**

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Solid reservoir bitumen are common in many petroliferous basins. The formation of solid reservoir bitumen has mainly attributed to natural processes including deasphalting, thermal alteration, and biodegradation. Different genetic solid bitumen reflects different secondary changes of petroleum. For the high evolution area, solid reservoir bitumen can also be formed by kinds of secondary changes during different evolution stages. Intensive study on the solid reservoir bitumen is useful to discover the oil accumulation mechanism. The aim of this work was to get some information on oil accumulation by studying the solid reservoir bitumen.

Combing organic petrology with geochemistry, the genesis of solid reservoir bitumen can be identified. Then the relationship between solid reservoir bitumen and oil accumulation for the selected study area was studied by combing geological settings especially such as the structural evolvement and hydrocarbon generation evolution. Through the thorough study of solid reservoir bitumen, the main conclusions are as follows:

- 1) Based on the characteristics of the biomarkers in the soluble reservoir bitumen, the source of oil, the gas interval and the period of oil-gas migration, accumulation and the preservation condition of oil and gas can be recognized.
- 2) Not only the inorganic diagenesis but also the organic diagenesis should be studied in the study of the reservoir evolution, and the new method to study reservoir using reservoir bitumen was founded. Using this method, the effective porosity distribution in different period was concluded, and the period and the reason of the late-formed tight reservoir were found, and the site of the effective reservoir was concluded.
- 3) The reservoir bitumen in high evolution area precipitated in the pore inheritedly, and the bitumen sealed belt can be formed when the precipitated bitumen filled pores totally. So the hidden reservoir related bitumen sealed belt formed. The key to identify this sort of reservoir is to find the site of the bitumen sealed belt. As for the palaeo reservoir, the edge of structure is always the bitumen sealed belt.