

The luminescent aromatic hydrocarbons of the oil of the Balakhani region of the Absheron peninsula of Azerbaijan

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Abstract

It is determined that the Balakhany deposit consists of paraffin-naphthenic (66% by weight), aromatic (37.13% by weight) hydrocarbons (AU) and tar (8.87% by weight) and is a heavy oil. It was found that the absorption spectra of the luminescent aromatic compounds of this oil are in the near UV and visible region and proceed up to 600 nm. Visual observation and investigation of luminescence spectra showed that Balachan oil oil includes luminescent mono-, bi-, tri- and tetracyclic PAH and their alkyl-substituted, luminescent heteroatomic (N, O, S) compounds, including cholestane steroids, stigmastan, gopan. Their luminescence colors of them change in the following order: violet (I gr. AU), bluish-violet (II gr. AU), bluish-green (III gr. AU), yellow (IV gr. AU), yellow-brown (resin). Unlike other AH groups, when excited by monochromatic light at 266 and 275 nm, the intensity of the luminescence band at 316 and 318 nm increases. In the spectral range of 320-630 nm, the luminescence bands overlap with each other, the luminescence maximum are recorded at 532, 547, and 617. It has been found that in the series I → II → III → IV gr the photoluminescence intensity increases when the sample is excited with monochromatic light of 226 nm. According to the chromatographic mass spectrometry data, the investigated oil may include, as well, cholestane, stigmastane and 28-nor-17a (*H*)-gopane and other unsaturated aromatic compounds, which gives luminescence in the UV and visible regions of the spectrum. Luminescence studies on this instrument oil samples was carried out a visual analysis, which characterizes not the details of the structure of matter, but reveals the type of chemical compound. At the same time, the composition of the oil is determined by the shades of the fluorescent glow of the spot.

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