CLASSIFICATION OF OIL BY RELATIVE DIELECTRICCONSTANT

Nabil Abdel Sater, Grigorov A.B., doctor of technical sciences, associate professor
National Technical University «Kharkiv Polytechnic Institute»

Classification of oil providing for its division into classes, types, groups and species depending on their qualitative and quantitative composition, properties and the presence of impurities is important for the refining industry. Based on the existing classifications, it is possible to predict the complexity and general direction of crude oil refining, to determine the hardware design of technological schemes and the range of products obtained.

Today for the classification of crude oil in world practice a number of classifications, which include: chemical, geochemical, genetic and technological [1] is used. But in our opinion, existing classifications need to be supplemented with the classification of crude oil according to its electrical properties, expressed as relative dielectric constant (ε).

The indicator (ε) of crude oil significantly depends on its chemical composition [2], which can be taken into account when developing a new alternative classification. Given the simplicity of determining the indicator (ε), this classification can be used for the operational characteristics of crude oil at the previous stage of its study.

The dependence of the indicator (ε) on the type of crude oil according to its chemical classification, is presented in Fig. 1.

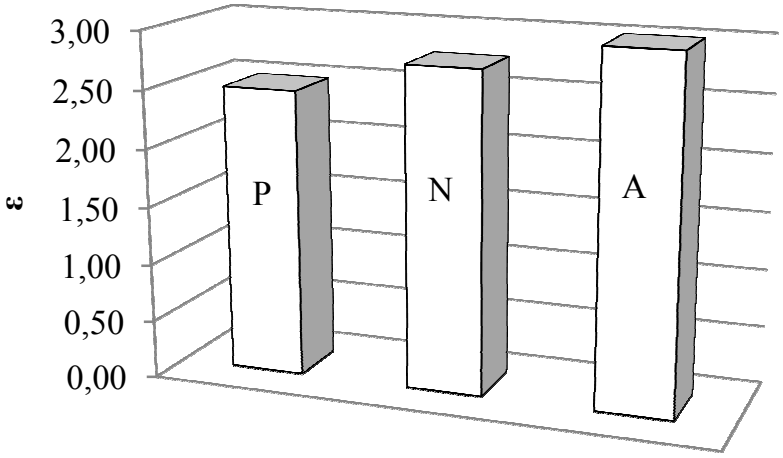

Fig.1. Dependence (ε) on the type of crude oil: P - paraffin; N - naphthenic; A - aromatic

Thus, the value of the indicator (ε) for different types of crude oil differs significantly from each other, which allows the development on the basis of it a new alternative classification.

References

1. Wedad H. Al-Dahhan and Shaymaa MA Mahmood.Classification of Crude Oils and its Fractions on the Basis of Paraffinic, Naphthenic and Aromatics. Al-Nahrain Journal of Science, 2019; 22 (3):35-42.

2. Heléne Vrålstad, Oyvind Spets, Cédric Lesaint, Lars Lundgaard and Johan Sjöblom. Dielectric Properties of Crude Oil Components. Energy Fuels, 2009; 23(11): 5596–5602.