STRUCTURAL CONSIDERATION OF KUKERSITE FROM AIR OXIDATION

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The aim of this work was to construct a kinetic model of oil shale oxidation with air that would allow the behavior of oil shale to be predicted under a wide range of reaction conditions. Since the structural units in the kerogen obey the oxidation reaction differently, a valuable information about the initial structure of the oil shale organic matter (kerogen) can be obtained. According to the experimental data and considerations from previous studies [1-3], a two-step model for the conversion of kerogen into a valuable carboxylic acid mixture was developed.

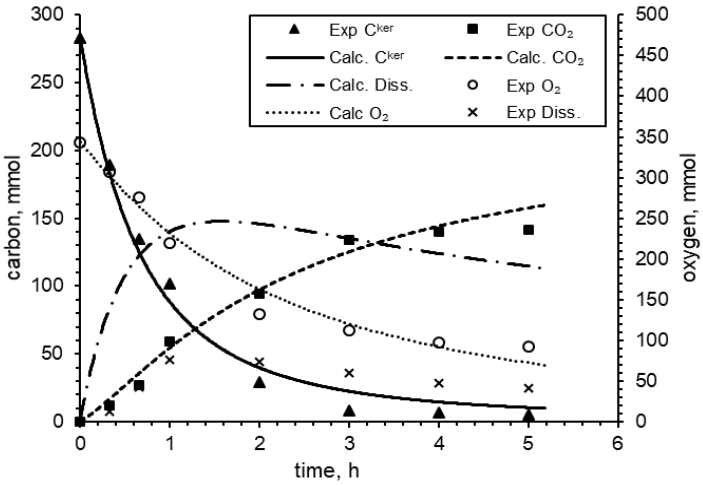

Fig.1 The comparison of calculated and experimental data of oil shale oxidation at 175°C, 40 bar of 50% O_2

As a result of this work, the proposed model showed good agreement with the experimental data (Figure 1). Rate constants for both steps of the kerogen oxidation process at various conditions were determined. Furthermore, the obtained results supported the argument that n-alkenyl resorcinol is the backbone of the complex kerogen matrix. Thus, the amount of aromatic carbon and the average length of the aliphatic chains between the aromatic units in the initial kerogen were estimated.

References

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