EAGE

EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS

ECMOR XIII

13th European Conference on the Mathematics of Oil Recovery

Handout

Supplemented by full conference proceedings on USB

TOTAL

10-13 September 2012
Biarritz, France

ECMOR XIII

Handout

ECMOR XIII
13th European Conference on the Mathematics of Oil Recovery

10-13 September 2012
Biarritz, France

EAGE Head Office

PO Box 59
3990 DB Houten
The Netherlands

Tel.: +31 88 995 5055
Fax: +31 30 634 3534

© 2012 European Association of Geoscientists & Engineers

Reservoir Recovery
A.N. Cheremisin (TNK-BP) & N.A. Cheremisin (TNK-BP)*

P42 Computational Method for Relative Permeability Curves based on the Bernoulli Generalized Porous Media Equations **118**
S. Stepanov (TNK-BP), N. Cheremisin (TNK-BP), S. Sokolov (TNK-BP), A. Altunin (TNK-BP) & A. Shabarov (Tyumen State University)*

P45 Rapoport -Leas Model for Two-phase Flow in Anisotropic Porous Media **119**
M.N. Kravchenko (Gubkin Russian State University of Oil and Gas), N.M. Dmitriev (Gubkin Russian State University of Oil and Gas) & M.N. Dmitriev (Gubkin Russian State University of Oil and Gas)*

P47 Alternative to Darcy's Law for the Description of the Newtonian Fluid Flow in Porous Media **120**
V.V. Kadet (Gubkin Russian State University of Oil & Gas) & P.S. Chagirov (Gubkin University)*

P48 Lithotype Clustering in Multidimentional Space **121**
I.R. Minniakhmetov (Moscow Institute of Physics & Technology)*

P49 Analysis and Evaluation of Heat and Mass Transfer Processes in Porous Media Based on Darcy-Stefan's Model **122**
D. Akhmed-Zaki (KazNU), N. Danaev (KazNU), S. Mukhambetzhanov (KazNU) & T. Imankulov (KazNU)*

P50 New Method for Connection Transmissibility Calculation **123**
A.Y. Yushkov (TNK-BP)*

P49

Analysis and Evaluation of Heat and Mass Transfer Processes in Porous Media Based on Darcy-Stefan's Model

D. Akhmed-Zaki* (KazNU), N. Danaev (KazNU), S. Mukhambetzhanov (KazNU) & T. Imankulov (KazNU)

SUMMARY

Oil and gas companies and research organizations developed and implemented in industry for new ways and processes of extraction and refining of oil and gas. For example, in today's world there is an enormous amount of research in the theory of filtration with a sufficient set of various mathematical models and different approaches to solve them, but unfortunately the reality of developments in the oil and gas fields, more complex processes of filtration options, taking into account the kinetics heat and mass transfer, etc., which of course directly affects the process flow operation of the facility and information systems requires a "fast" response (calculation) and forecasting. The latter implies the formation of an adequate IT systems, computer simulation and its early settlement for the shortest time that can not be achieved without the use of modern programming packages. Similary problems in using of surfactants. Injection of heat-carriers include mass and heat transfers in two different areas, combined transition interfaces through the moving front and accompanied by phase changes. The last two characteristics describe a general class of problems known as the Stefan and Verigin types of problem. We developed and studied a variety of mathematical models of filtration in a porous media with kinetic relations of heat and mass transfer. Created a computational algorithm of the task. In studying the process of pumping Surfactants in a productive oil reservoir must consider thermal effects that are more convenient to define a kinetic equation of heat and mass transfer characteristics for two different areas, combined transition interfaces through the moving front and accompanied by phase changes, which defines a single constructive approach solving a general class of problems like Stefan and Verigin or Darcy-Stefan.
We offered mathematical model describing the mass transfer processes for nonisothermal filtration with conditions of formation boundaries of "transition" zones and computational parallel algorithm for 3D case based on Web oriented applications.