عنوان مقاله:

A Closer Look at Applying Dispersion Coefficient in Conventional Simulators

محل انتشار:

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خلاصه مقاله:

Mass dispersion has a crucial role in EOR processes in which oil is produced through miscible displacement. In fact, it determines the ability of solvent to be mixed with oil trapped in the reservoir. However, mass dispersion is a slow process and solvent molecules can not disperse far in the oil.Many conventional reservoir simulators do not explicitly account for the physical dispersion. In some others that physical dispersion can come into effect, utilization of typical dispersion coefficient is a matter of doubt. For instance, due to the large grid block sizes generally used in the conventional simulators, they can not account for small distances of physical dispersion; moreover, application of large grid blocks can cause high values of numerical dispersion, higher than that of physical dispersion. Therefore, the solvent mixes with the oil as a consequence of numerical dispersion, and not physical dispersion.Verifying the validity of this claim based on Butler's equation and Fanchi's formulas is the final target of this paper. Approximated values of numerical dispersion by these approaches show that (i) these values are almost great and resolving methods are not economically viable (ii) application of total mass dispersion coefficient extracted from accurate experimental surveys in conventional simulators is practically covered by values of numerical dispersion. This argument is equivalent of using almost null values for these properties.

کلمات کلیدی:

physical dispersion, numerical dispersion, reservoir simulation, VAPEX

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