Supporting Information for:

Effect of electrokinetics and thermodynamic equilibrium on low salinity water flooding for enhanced oil recovery in sandstone reservoir

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Example PHREEQC input file of triple-layer surface complexation model coupled with phase-equilibrium model for sandstone.

SOLUTION   1

units   mmol/kgw

Temp   25

ph   6.33

Na   604.61

Cl   685.47

Ca   14.97

Mg   64.17

S(6)   35.60

water   0.02

EQUILIBRIUM_PHASES   1

Kaolinite   0   5.42E-07

Quartz   0   1.52E-04

K-feldspar   0   1.33E-06

Dolomite   0   8.13E-07

Albite   0   4.58E-07

SURFACE_MASTER_SPECIES

Surf_al   Surf_alOH

Surf_si   Surf_siOH

Surf_qs   Surf_qsOH

SURFACE_SPECIES

Surf_alOH   =   Surf_alOH

-cd_music   0   0   0

log_k   0

Surf_siOH   =   Surf_siOH

-cd_music   0   0   0

log_k   0

Surf_alOH   +   H+   =   Surf_alOH2+

-cd_music   1   0   0

log_k   0.8

Surf_siOH   +   H+   =   Surf_siOH2+

-cd_music   1   0   0

log_k   0.8

Surf_alOH   =   Surf_alO-   +   H+

-cd_music   -1   0   0

log_k   -7

Surf_siOH   =   Surf_siO-   +   H+

-cd_music   -1   0   0

log_k -7

Surf_alOH   +   Ca++   =   Surf_alOCa+   +   H+

-cd_music   -1   2   0

log_k -6

Surf_siOH   +   Ca++   =   Surf_siOCa+   +   H+

-cd_music   -1   2   0

log_k -6

Surf_alOH   +   Mg++   =   Surf_alOMg+   +   H+

-cd_music   -1   2   0

log_k -5.55

Surf_siOH   +   Mg++   =   Surf_siOMg+   +   H+

-cd_music   -1   2   0

log_k -5.55

Surf_qsOH   =   Surf_qsOH

-cd_music   0   0   0

log_k 0

Surf_qsOH   +   H+   =   Surf_qsOH2+

-cd_music   1   0   0

log_k   -1.75

Surf_qsOH   =   Surf_qsO-   +   H+

-cd_music   -1   0   0

log_k   -6.75

Surf_qsOH   +   Ca++   =   Surf_qsOCa+   +   H+

-cd_music   -1   2   0

log_k   -5.7

Surf_qsOH   +   Mg++   =   Surf_qsOMg+   +   H+

-cd_music   -1   2   0

log_k   -5.70

SURFACE   1

-sites_units Density

-cd_music

-equilibrate   1

Surf_alOH   5.5

Surf_siOH   5.5

Surf_qsOH   4.6   2.34   0.01

-capacitance   3.098   0.2

END