

General comments:

The manuscript is revised according to the reviewers recommendations and, in doing so, strengthened a lot. It introduces a new and promising way to interpret NMR relaxation data. After a few corrections (see the specific comments above), it is ready to be published. I have one last suggestion. In my understanding, the worth of comparing the analytical solution with the numerical simulations is not the validation of the analytical solution, because physically plausible and mathematically correct derivations do not need other validations than those by real data (see also my comment on Line 341). Applying the new model to explain real data quantitatively is still an issue for future research. However, the benefit of testing and validating the corresponding numerical simulations is to provide an additional benchmark for these simulations and to show again (in addition to Mohnke and Klitzsch, 2010) their potential for further complex applications, e.g., considering pore networks containing angular pores. At least for me, this is also a significant conclusion from this study.

Best Regards,

Stephan Costabel

Specific comments:

L270: change to "surface-to-volume-ratio"

L 281: "...shifts to signal contributions with shorter relaxation times..."

It would be beneficial to include a sub-clause here such as "exceeding the original distribution at saturation" to point out the specific behavior of the arc menisci. Otherwise, this statement as it stands is also true for the cylindrical pores.

L 306: You mean Eq. 5 and 6 instead of 4 and 5 (after including a new Eq. 4)

L341: It's rather a philosophical issue: I am not happy with the idea to VALIDATE a correctly derived analytical solution by using numerical (= approximated) simulations. The other way around is often necessary for introducing new numerical approaches, which is not the case in this manuscript. I would prefer another wording for this sentence, but, of course, it's up to the authors.

Figure 9: The assignment of the gray colors between the arc menisci (top) and the spectral lines (bottom) is not correct. The largest contribution to the signal is depicted by the dark gray line but comes from the arc meniscus in the sharp angle depicted by light gray area.

Figure 15: Erase one "tri" in the legend entry for the imbib. path