

Hohai University, Nanjing, China

February 19, 2019

Dear GJI Editor

Enclosed you find our manuscript *Effect of capillarity and relative permeability on  $Q$  anisotropy of hydrocarbon source rocks*, by Santos et al., to be considered for publication in Geophysical Journal International.

We have carefully checked the bibliography on mesoscopic attenuation and  $Q$  anisotropy in source and reservoir rocks, without finding any paper treating the case of multiphase fluids. The model we are using, published in JASA in 1990, has never being challenged, and never other scientists have found a failure in the arguments. It is also the case that geophysicists do not consider multiphase saturant fluids since they are not familiar with the subject, which is of common use in reservoir simulations. They prefer to analyze the cases of effective single-phase fluids, or use ad-hoc models that artificially introduce membranes to represent capillary effects. These scientists ignore (may be because they ignore the theoretical basis of two-phase fluid flow) the presence of relative permeability functions modeling the interaction between the two-phase fluids as they move within the pore space. Furthermore, the case of  $Q$  anisotropy in shale oil-gas reservoirs (two fluids assuming surface tension) has not been considered, and the published papers only consider velocity anisotropy or a single effective fluid. The results are quite different if compared to the case of a single effective fluid, as shown in the

paper.

Sincerely,

Prof. Jing Ba, corresponding  
author