

Interactive comment on “Increased flow rate of hyperpolarized aqueous solution for DNP-enhanced MRI achieved by an open Fabry-Pérot type microwave resonator” by Alexey Fedotov et al.

Anonymous Referee #2

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Focus of the manuscript is the design and construction of a microwave structure that allows for improved saturation of EPR transitions in Overhauser DNP applied to MRI investigations at high magnetic field (1.5 T). The development of the hardware is a very nice piece of work; the achieved signal enhancement is quite substantial. The potential in real MRI application, however, is not satisfactorily discussed, whereas the problems of alternative methods got much space in the Introduction; for example, drawbacks of Gd-based contrast agents are discussed in detail, while disadvantages of nitroxide dopants as used here stay unmentioned. The concluding sentence of

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the manuscript concerning angiography applications is, therefore, not compelling and must be modified. In addition, part of the text seems to be written only for the small group of microwave specialists, but not for the general magnetic resonance community. As an example, the parameter S11 in Figures 3 and 8 is taken as granted, but should be defined; in Figure 4 and in Conclusion the microwave field B1 is given in the strange unit of A/m. Some modifications in this regard could improve the manuscript considerably. Also, reason for the choice of TEMPOL as radical dopant is missing; no word is lost about the concentration of 28 mM, although it probably affects the proton T1 relaxation, which is a crucial factor for any application of the method.

Please also note the supplement to this comment:

<https://mr.copernicus.org/preprints/mr-2020-20/mr-2020-20-RC2-supplement.pdf>

Interactive comment on Magn. Reson. Discuss., <https://doi.org/10.5194/mr-2020-20>, 2020.

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