MAGNETIC RESONANCE
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Discussions

Interactive comment on "Open-source, 3D-printed, high-pressure (50 bar) liquid-nitrogen-cooled *para*-hydrogen generator" *by* Frowin Ellermann et al.

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Recent developments in hyperpolarization techniques allow dramatic increases in sensitivity of orders of magnitude that open new perspectives both in preclinical and in clinical application. The possibility of building a very economical high pressure parahydrogen producer is certainly useful for the spread of this technique.

Although 50% para enrichment precludes the possibility of exploiting this generator for in vivo preclinical applications, as demonstrated by the authors it will be very useful for fundamental research.

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In this contribution, a well-constructed and well written piece of work, the authors describe the design and construction of a high-pressure low cost parahydrogen generator, also keeping in mind the safety aspects.

The work is undoubtedly interesting, carefully done and nicely presented. In my opinion this paper should be published after some minor revisions.

- I find the title misleading, reading it I thought the authors provided a printable 3D-model of the parahydrogen generator, therefore I suggest to modify it.

- The cotton wool filters used to protect the system from catalyst contamination it could be better described. It would be interesting to know the life time if the cylinder had been vacuumed or even washed with H2/pH2 before being filled with pH2, in order to verify that the value obtained using this generator is comparable with those reported previously.

- I don't understand the meaning of "points loss of f_pH2". Is this value related in some way to the polarization obtainable (1/3) with respect to f_pH2 $\approx$ 100 %? The authors should rephrase the sentence to clarify this concept and/or add the formula that defines it.

- In general, I agree with all the comments proposed by the other reviewers.

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