Reviewer’s report

Title: Introduction of a new model for time-continuous and non-contact investigations of in-vitro thrombolysis under physiological flow conditions

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Reviewer: Max Nedelmann

Reviewer’s report:

This is a well written manuscript that describes a novel approach to in vitro investigation on sonothrombolysis. Current in vitro models on (sono-)thrombolysis are all lacking a setup which allows close mimicking of physiological conditions which, as the authors express, is an important quality aspect of in vitro research. The model introduced in this study provides an interesting approach to in vitro measurements under conditions that get much closer to physiological conditions than previous models. In this sense, this study is a significant contribution to the research on experimental thrombolysis.

There are some minor essential revisions that should be addressed:

1. All authors contributed equally?
I have never seen this approach before in a publication and I don´t think this is justified. The authors should omit this approach and change to a more reasonable weighing of authors´ contribution expressed by their place in the author list order.

2. Abstract, methods (and methods section page 10): 179 x 10^-7 W/m² seems unusual to express intensity and is difficult to translate.

3. Page 9: What is POM?

4. Page 11, second paragraph: “reflecting a realistic haemodynamic situation in the acute phase of an ischemic stroke.“ The detected flow spectrum (displayed in Fig 3) rather seems to be a realistic hemodynamic situation in open vessels. A realistic flow spectrum in occluded vessels would have a more pulsatile nature. Please comment on this.

5. Figure 1: The temperature is controlled within the reservoir. Have you checked for temperature at the site of thrombolysis (the clot carrier)?

6. Have the investigators thought of using human blood instead of Ringer solution? It might further add to physiological conditions. The use of human blood should be feasible considering the use of blood in PVC tubing in extracorporeal circulation in heart surgery. Please comment on this in the discussion section.

7. The paper is well written, but I managed to pick up two spelling mistakes: Methods section page 6, second sentence: Flow, not flows
Figure 1: degassed, not degased

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare that I have no competing interests’