



27th February 2020

Dear Sir/Madam,

I write to report on Jitka Cejkova's habilitation thesis "Chemical Engineering Contribution to Artificial Life Research".

The thesis describes the field of artificial life research, how it has developed in the decades since its inception, and how it interfaces with research into the origin of life. The science contained in the thesis is primarily her work on so-called *liquid robots*, which are artificially made microparticles with dynamics resembling simple behaviour of living systems. She describes in succeeding chapters artificial life research in general; droplets as liquid robots; the concept of chemotaxis; morphogenesis; the behaviour of assemblies or groups of entities and its application to liquid robots; and lastly her work on other artificial systems. The thesis gives a clear and well-reasoned account of how chemical engineering as a discipline can make a contribution to these areas of research.

In the published work that she reproduces in the appendices to the thesis, Dr Cejkova presents seven pieces of her work on liquid robotics and its applications. The pieces are well chosen to illustrate the breadth and depth of her contributions.

As well as recounting the field within which she works, and what she has achieved so far in her research career, in this thesis the author is laying down a marker for her future research. Based upon what is contained in the thesis, I augur that she has a most productive research career ahead of her, since she is well prepared and well placed to make further contributions to the field of artificial life research.

Questions that might be put to the habilitant include:

- To justify the importance of such interdisciplinary research in a chemical engineering context.
- Where does she see liquid robotics and its applications to artificial life research in a decade from now?
- What are her plans for PhD topics for her next students?
- Has she considered how might liquid robots be employed in medical and clinical fields?

I am strongly in favour of the type of interdisciplinary research that Dr Cejkova describes, which is more difficult to perform than work that is contained within a single discipline, but by the same token, can produce greater scientific rewards if done well; she clearly does this research very well. Based upon this thesis, I recommend Jitka Cejkova very strongly and without any reservation for habilitation, and I should be happy to answer any further queries you may have.





Yours faithfully,

H.E. Cartingth ____

Julyan Cartwright Senior Research Scientist, CSIC (Spanish National Research Council)

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