**Title**

Source data for the publication: Miniaturized metachronal magnetic artificial cilia

**Description**

This data set contains the source data of the publication: Cui, Z., Wang, Y., Zhang, S., Wang, T. & Toonder, J.M.J. den (2023). Self-cleaning surfaces realized by biologically sized magnetic artificial cilia. PNAS 2023, Vol. 120, No. 35, e2304519120. <https://doi.org/10.1073/pnas.2304519120>. In this study, we introduce a concept that generates metachronal motion of magnetic artificial cilia (MAC), even though the MAC are all identical, and the applied external magnetic field is uniform. This is achieved by integrating a paramagnetic substructure in the substrate underneath the MAC. Uniquely, we can create both symplectic and antiplectic metachrony by changing the relative positions of MAC and substructure. We demonstrate the flow generation of the two metachronal motions in both high and low Reynolds number conditions. The data are experimentally obtained with methods described in the publication.

**Format**

Publication: .pdf

Data: both in .xlsx, and .csv

**Funding**

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**Organization**

TU Eindhoven, Department of Mechanical Engineering