

Supporting Information

Collective motion of self-propelled chemical garden tubes

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Supporting figures

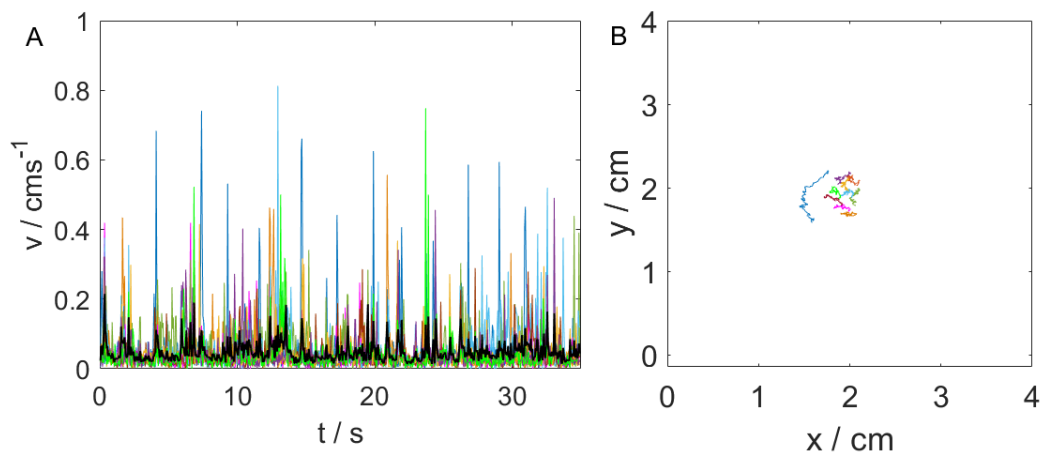


Figure S1: (A) Speed and (B) trajectories of an ensemble of ten tubes after 9 h. Elapsed time: 34.90 s, H_2O_2 concentration: 7%. The black curve in (A) represents the average speed of all tubes.

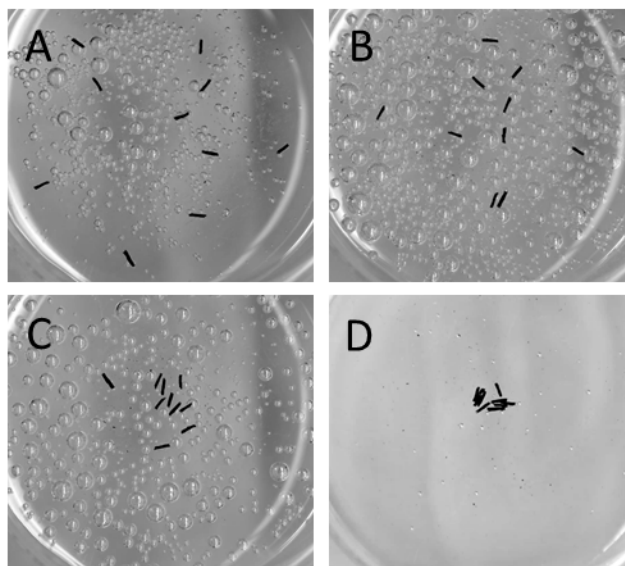


Figure S2: Snapshots of the self-propelled tubes in a thin layer of 7% H_2O_2 solution after (A) 15 min, (B) 3 h, (C) 6.5 h, and (D) 1 day. Field of view: $3.6 \times 3.2 \text{ cm}^2$.

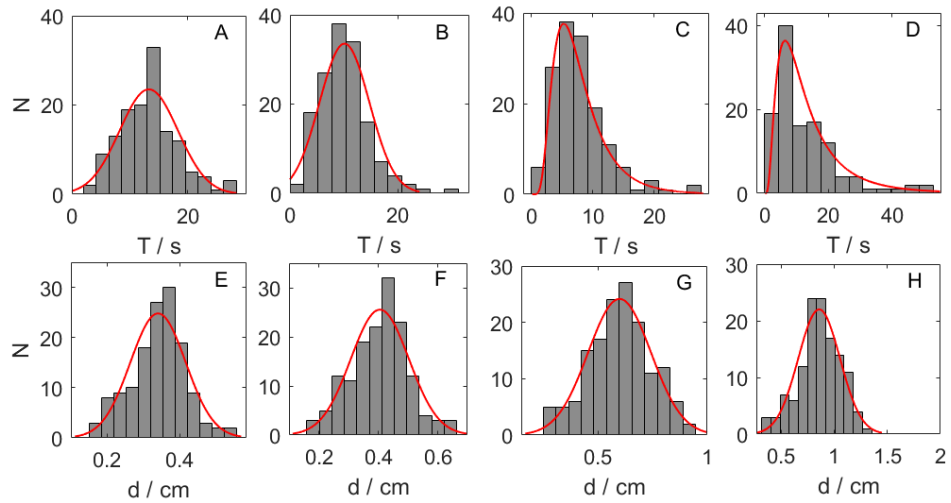


Figure S3: Histograms of the (A-D) period and (E-H) maximal bubble diameter as obtained from experiments with six tubes using (A, E) 2%, (B, F) 3%, (C, G) 5%, and (D, H) 7% H_2O_2 . The red curves are normal and log-normal fits.

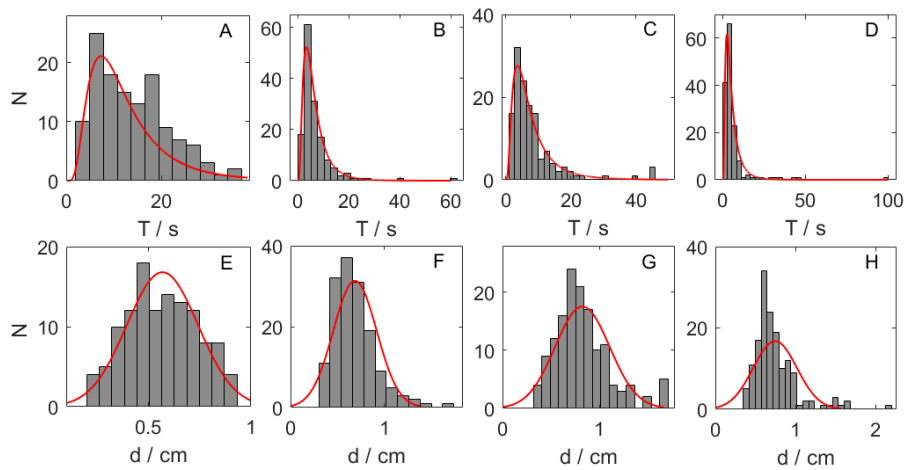


Figure S4: Histograms of the (A-D) period and (E-H) maximal bubble diameter as obtained from experiments with 7% H_2O_2 using (A, E) 3, (B, F) 8, (C, G) 11, and (D, H) 14 tubes. The red curves are normal and log-normal fits.

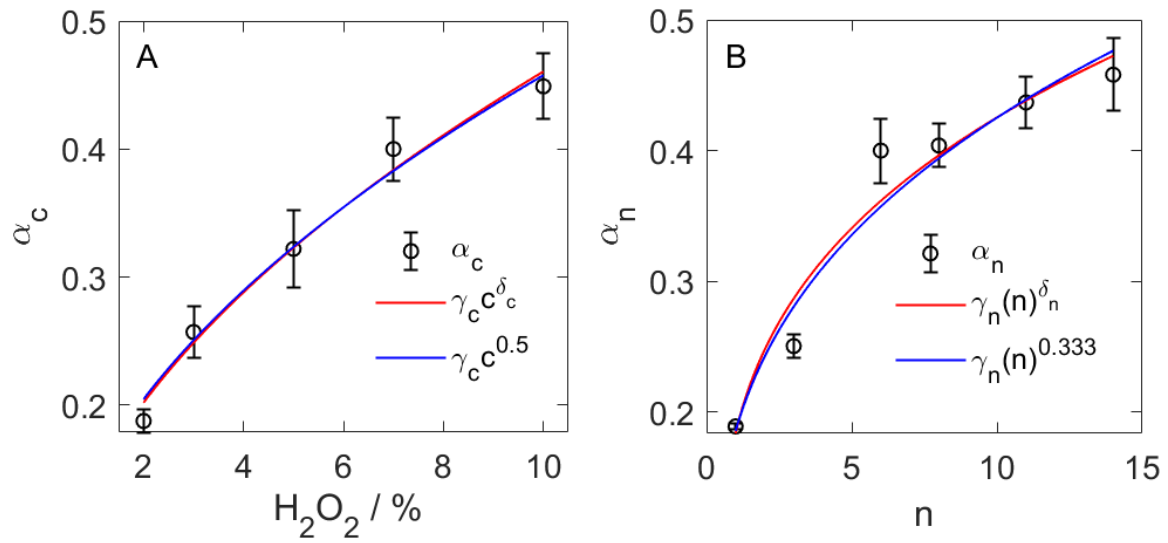


Figure S5: Bubble growth scaling exponent as a function of (A) H_2O_2 concentration (six tubes) and (B) swarm size (7% H_2O_2). The floating exponents δ_c and δ_n (red curves in A, B) were 0.51 ± 0.05 and 0.34 ± 0.03 , respectively.

Supporting videos:

Movie S1: Self-propulsion of ten chemical garden tubes in a thin layer of 7% H_2O_2 after 15 min, shown at 2X the actual speed.

Movie S2: Rhythmic oscillation of ordered-unordered state of six tubes for 7% H_2O_2 , shown at 2X the actual speed.