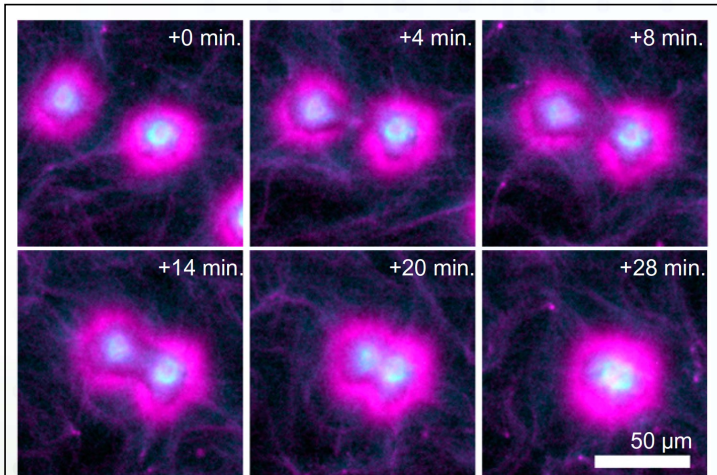


## Active composite materials

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Active forces sculpt the forms of living things, generating adaptable and reconfigurable dynamical materials. Creating synthetic materials that exhibit comparable control over internally generated active forces remains a challenge. Here, active composite networks, collectively driven by the force-generating molecular motors, exhibit complex spatiotemporal patterns similar to those observed in cell biology. This model system elucidates the essential role of passive elasticity in controlling the emergent nonequilibrium dynamics while also establishing a robust experimental platform for engineering lifelike materials.



Self-assembly of onion-like layered asters. A self-regulating mechanism ensures the asters' layered structure survives coalescence-like events, while their temporal stability is encoded in the mechanical properties of the network.