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Twirling DNA Rings - Swimming Nanomotors Ready for a Kick-start IGOR KULIC, Dr., ROCHISH THAOKAR, HELMUT SCHIESSEL — We propose a rotary DNA nanomachine that shows a continuous rotation with a frequency of 10^2 -10^4Hz. The device consists of a minicircle with the DNA sequence chosen appropriately to achieve anisotropic elastic features generating a ratchet potential. The motor can be externally driven via the ratchet effect through periodic temperature oscillations. As a result the ring self-propels through the fluid like a molecular "ring of smoke" with a speed up to microns per second. Hydrodynamic interactions open the possibility of self-organized collective ratchet behavior in semi-dilute solutions of twirling DNA rings.

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