

According to the present disclosure there is provided a device for restricting fluid flow in physiological vessels of humans or animals, the device being configurable in a first mode to be passively propellable by fluid flow within a physiological vessel and in a second mode to at least partially occlude a physiological vessel, the device having a first cross-sectional size in the first mode and a second cross-sectional size in the second mode, wherein the second cross-sectional size is greater than the first cross-sectional size. Also provided is a system for restricting fluid flow in physiological vessels of humans or animals, the system comprising a plurality of devices of any of the above, a power source for powering the devices, and a controller comprising one or more processes for controlling the devices. Advantageous features are claimed in dependent claims.

The present disclosure provides a device and system for accurately restricting fluid flow such as the flow of blood in physiological vessels of humans and animals. The device will hereinafter be referred to as a nanorobot or a nanobot. A nanobot may comprise a mechanical or electromechanical robot small enough to pass through the human or animal circulatory system. The nanobot of the present disclosure may have a cross-sectional size in a range of about 2.8 μm to about 5.2 μm in an unactivated state.

The nanobot may be fabricated using standard semiconductor or MEMS (Micro-Electro-Mechanical Systems) technology. The nanobot may comprise a radio antenna which receives position signals from a primary validation sub-system via an RF encoder/interferometer system. In this manner the nanobot can detect its relative displacement from a fixed starting point in the X, Y and Z axes.

An imaging apparatus, such as an MRI machine, may be used as a separate device but in conjunction with the present disclosure to provide (a) a

verification of the existence and location of unwanted tissue and (b) as a power source for the nanobots via a magnetic field.

5 The purpose of the nanobots is to disrupt the normal operation of the capillary network in the target region in order to destroy damaged or unwanted tissue.

 A magnetic flux generating mechanism may be used to provide the power source for the nanobots.

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