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(71) Applicant(s):

THE NOTTINGHAM TRENT UNIVERSITY [GB/GB]; Clifton Lane Nottingham Nottinghamshire NG11 8NS (GB) *(for all designated states)*

NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST [GB/GB]; City Hospitals Campus Hucknall Road Nottingham Nottinghamshire NG5 1PB (GB) *(for all designated states)*

(72) Inventor(s):

BREEDON, Philip; The Nottingham Trent University Burton Street Nottingham Nottinghamshire NG1 4BU (GB)

COULTER, Fergal; c/o Nottingham Consultants Limited Burton Street Nottingham Nottinghamshire NG1 4BU (GB)

RICHENS, David; Laburnum Cottage Mill Lane Orston Nottingham Nottinghamshire NG13 9NE (GB)

(74) Agent(s):

BARKER BRETTELL LLP; 100 Hagley Road Edgbaston Birmingham West Midlands B16 8QQ (GB)

(54) Title (EN): ELECTROACTIVE ACTUATORS

(54) Title (FR): ACTIONNEURS ÉLECTRO-ACTIFS

(57) Abstract:

(EN): The invention relates to actuators based on electroactive polymeric materials for use in pumping fluids or in other applications where a contractile actuation is required, in particular although not necessarily exclusively for use in vascular pulsation devices such as a variable aortic tension device. Embodiments disclosed include an actuator (10) comprising: an inner tubular structure (15, 12); an outer tubular structure (13, 14) surrounding the inner tubular structure (5, 12) and comprising a plurality of layers of a dielectric elastomeric material (13) and a tubular elastic support structure (14), the elastic support structure (14) configured to maintain a pre-stress in the layers of the dielectric elastomeric material (13), wherein the outer tubular structure (13, 14) is configured to contract in a radial direction around the inner tubular structure (12, 15) upon application of an actuation voltage signal across the dielectric elastomeric material layers (13).

(FR): L'invention concerne des actionneurs utilisant des matériaux polymères électro-actifs, que l'on utilise dans le pompage de fluides ou d'autres applications où un actionnement par contraction est nécessaire, notamment, mais pas nécessairement de manière exclusive, dans des dispositifs de pulsation vasculaire comme un dispositif de tension aortique variable. Les modes de réalisation portent sur un actionneur (10) comprenant : une structure tubulaire interne (15, 12); une structure tubulaire externe (13, 14) entourant la structure tubulaire interne (15, 12) et comprenant plusieurs couches d'un matériau élastomère diélectrique (13) et une structure de support élastique tubulaire (14), laquelle structure de support élastique tubulaire (14) est conçue pour maintenir une précontrainte dans les couches du matériau élastomère diélectrique (13), la structure tubulaire externe (13, 14) étant conçue pour se contracter dans une direction radiale autour de la structure tubulaire interne (15, 12) lors de l'application d'un signal de tension d'actionnement dans les couches de matériau élastomère diélectrique (13).

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Declarations:

Declaration made as applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate