

Dr Federico Carpi PhD

School of Engineering and Materials Science
Queen Mary University of London
Mile End Road
London E1 4NS

tel: +44 (0)20 7882 6087
email: f.carpi@qmul.ac.uk web: www.sems.qmul.ac.uk/f.carpi

2015

Electrical breakdown of an acrylic dielectric elastomer: Effects of hemispherical probing electrodes size and force.

Chen B, Kollosche M, Stewart M, Busfield J and Carpi F. *International Journal of Smart and Nano Materials* vol. 6, (4) 290-303.

Standards for dielectric elastomer transducers.

Carpi F, Anderson I, Bauer S, Frediani G, Gallone G, Gei M, Graaf C, Jean-Mistral C, Kaal W, Kofod G, Kollosche M, Kornbluh R, Lassen B, Matysek M, Michel S, Nowak S, O'Brien B, Pei Q, Pelrine R and Rechenbach B. *Smart Materials and Structures* vol. 24, (10) 105025-105025.

Soft dielectrics for capacitive sensing in robot skins: Performance of different elastomer types.

Maiolino P, Galantini F, Mastrogiovanni F, Gallone G, Cannata G and Carpi F. *Sensors and Actuators a: Physical* vol. 226, 37-47.

Ultrafast All-Polymer Electrically Tunable Silicone Lenses.

Maffli L, Rosset S, Ghilardi M, Carpi F and Shea H. *Advanced Functional Materials* vol. 25, (11) 1656-1665.

2014

Wearable Wireless Tactile Display for Virtual Interactions with Soft Bodies.

Frediani G, Mazzei D, De Rossi DE and Carpi F. *Frontiers in Bioengineering and Biotechnology* vol. 2,.

Enabling variable-stiffness hand rehabilitation orthoses with dielectric elastomer transducers.

Carpi F, Frediani G, Gerboni C, Gemignani J and De Rossi D. *Medical Engineering & Physics* vol. 36, (2) 205-211.

Stretchable optical device with electrically tunable absorbance and fluorescence.

Hanley CA, Gun'ko YK, Frediani G and Carpi F. *Smart Materials and Structures* vol. 23, (1) 015009-015009.

2013

Effects of plasticization of a soft silicone for dielectric elastomer actuation.

Galantini F, Carpi F and Gallone G. *Smart Materials and Structures* vol. 22, (10).

Electromechanically active polymer transducers: research in Europe.

Carpi F, Graz I, Jager E, Skov AL and Vidal F. *Smart Materials and Structures* vol. 22, (10) 100301-100301.

Predictive stress-stretch models of elastomers up to the characteristic flex.

Carpi F and Gei M. *Smart Materials and Structures* vol. 22, (10) 104011-104011.

Grand challenges in magnetic capsule endoscopy.

Carpi F and Shaheed H. *Expert Review of Medical Devices* vol. 10, (4) 433-436.

Dielectric elastomer actuators for tuneable optics.

Zahabi H, Frediani G, Busfield JJC and Carpi F. *Constitutive Models For Rubber Viii - Proceedings of The 8th European Conference On Constitutive Models For Rubbers, Eccmr 2013* 697-700.

2012

Electroactive elastomeric actuators for biomedical and bioinspired systems.

Carpi F, Frediani G and De Rossi D. *Proceedings of The Ieee Ras and Embs International Conference On Biomedical Robotics and Biomechatronics* 623-627.

Modeling and experimental validation of buckling dielectric elastomer actuators.

Vertechy R, Frisoli A, Bergamasco M, Carpi F, Frediani G and De Rossi D. *Smart Materials and Structures* vol. 21, (9).

Effects of Corona treatment on electrical and mechanical properties of a porous dielectric elastomer.

Galantini F, Gallone G and Carpi F. *Ieee Transactions On Dielectrics and Electrical Insulation* vol. 19, (4) 1203-1207.

Bioinspired tunable lens driven by electroactive polymer artificial muscles.

Carpi F, Frediani G and De Rossi D. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformat* vol. 7375 LNAI, 74-82.

Computational model of hydrostatically coupled dielectric elastomer actuators.

Wang H, Cai S, Carpi F and Suo Z. *Journal of Applied Mechanics, Transactions Asme* vol. 79, (3).

Small-strain modeling of helical dielectric elastomer actuators.

Carpi F and De Rossi D. *Ieee/Asme Transactions On Mechatronics* vol. 17, (2) 318-325.

Contractile hydrostatically coupled dielectric elastomer actuators.

Carpi F, Frediani G and Rossi DD. *Ieee/Asme Transactions On Mechatronics* vol. 17, (5) 987-994.

2011

Electroactive polymer patches for wearable haptic interfaces.

De Rossi D, Carpi F, Carbonaro N, Tognetti A and Scilingo EP. *Proceedings of The Annual International Conference of The Ieee Engineering in Medicine and Biology Society, Embs* 8369-8372.

Special section on biomimetics of movement.

Carpi F, Erb R and Jeronimidis G. *Bioinspiration and Biomimetics* vol. 6, (4).

Electroactive polymer actuators as artificial muscles: Are they ready for bioinspired applications?.

Carpi F, Kornbluh R, Sommer-Larsen P and Alici G. *Bioinspiration and Biomimetics* vol. 6, (4).

Soft elastomeric electrets for electro-active polymers.

Galantini F, Gallone G, Carpi F, Levita G and De Rossi D. *Proceedings - International Symposium On Electrets* 31-32.

Electroactive polymer patches for wearable haptic interfaces.

De Rossi D, Carpi F, Carbonaro N, Tognetti A and Scilingo EP. *Conference Proceedings : ... Annual International Conference of The Ieee Engineering in Medicine and Biology Society. Ieee Engin* 8369-8372.

Bioinspired Tunable Lens with Muscle-Like Electroactive Elastomers.

Carpi F, Frediani G, Turco S and De Rossi D. *Advanced Functional Materials* vol. 21, (21) 4152-4158.

Hydrostatically coupled dielectric elastomer actuators: New opportunities for haptics.

Carpi F, Frediani G and De Rossi D. *Materials Research Society Symposium Proceedings* vol. 1312, 3-12.

Seeking the 'holy Braille' display: Might electromechanically active polymers be the solution?.

Runyan NH and Carpi F. *Expert Review of Medical Devices* vol. 8, (5) 529-532.

Opportunities of hydrostatically coupled dielectric elastomer actuators for haptic interfaces.

Carpi F, Frediani G and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 7976.,

Dielectric elastomer actuators with granular coupling.

Carpi F, Frediani G, Nanni M and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 7976.,

Magnetically controllable gastrointestinal steering of video capsules.

Carpi F, Kastelein N, Talcott M and Pappone C. *Ieee Transactions On Biomedical Engineering* vol. 58, (2) 231-234.

Guest editorial: Introduction to the focused section on electroactive polymer mechatronics.

Carpi F, Kornbluh R, Sommer-Larsen P, De Rossi D and Alici G. *Ieee/Asme Transactions On Mechatronics* vol. 16, (1) 1-8.

Granularly coupled dielectric elastomer actuators.

Carpi F, Frediani G, Nanni M and De Rossi D. *Ieee/Asme Transactions On Mechatronics* vol. 16, (1) 16-23.

Introduction to the Focused Section on Electroactive Polymer Mechatronics.

Carpi F, Kornbluh R, Sommer-Larsen P, De Rossi D and Alici G. *Ieee-Asme Transactions On Mechatronics* vol. 16, (1) 1-8.

2010

Materials science. Stretching dielectric elastomer performance.

Carpi F, Bauer S and De Rossi D. *Science* vol. 330, (6012) 1759-1761.

Stretching dielectric elastomer performance.

Carpi F, Bauer S and De Rossi D. *Science* vol. 330, (6012) 1759-1761.

The vectorial organization of the human myocardium is designed for optimal electrical and contractile activity: Clinical implications of its alterations.

Tafani M, Carpi F, Morgante E, Russo A, Carpi A, Fini M, Marino B, Frustaci A and Russo MA. *Wit Transactions On Ecology and The Environment* vol. 138, 593-602.

Electroactive polymer artificial muscles: An overview.

Carpi F and De Rossi D. *Wit Transactions On Ecology and The Environment* vol. 138, 353-364.

Natural and artificial helical structures.

Carpi F, Carpi A and Russo MA. *Wit Transactions On Ecology and The Environment* vol. 138, 585-592.

Pattern reconfigurable antenna based on moving V-shaped parasitic elements actuated by dielectric elastomer.

Daheshpour K, Jalali Mazlouman S, Mahanfar A, Yun JX, Han X, Menon C, Carpi F and Vaughan RG. *Electronics Letters* vol. 46, (13) 886-888.

Hydrostatically coupled dielectric elastomer actuators for tactile displays and cutaneous stimulators.

Carpi F, Frediani G and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 7642,

Electroactive elastomeric actuator for all-polymer linear peristaltic pumps.

Carpi F, Menon C and De Rossi D. *Ieee/Asme Transactions On Mechatronics* vol. 15, (3) 460-470.

Hydrostatically coupled dielectric elastomer actuators.

Carpi F, Frediani G and De Rossi D. *Ieee/Asme Transactions On Mechatronics* vol. 15, (2) 308-315.

Editorial: Magnetic capsule endoscopy: The future is around the corner.

Carpi F. *Expert Review of Medical Devices* vol. 7, (2) 161-164.

Perspectives for new dielectric elastomers with improved electromechanical actuation performance: Composites versus blends.

Gallone G, Galantini F and Carpi F. *Polymer International* vol. 59, (3) 400-406.

Millimetre-scale bubble-like dielectric elastomer actuators.

Carpi F, Frediani G, Tarantino S and De Rossi D. *Polymer International* vol. 59, (3) 407-414.

Real-time control of dielectric elastomer actuators via bioelectric and biomechanical signals.

Carpi F, Raspopovic S, Frediani G and De Rossi D. *Polymer International* vol. 59, (3) 422-429.

Electromechanically Active Polymers.

Carpi F. *Polymer International* vol. 59, (3) 277-278.

Magnetic capsule endoscopy: the future is around the corner.

Carpi F. *Expert Review of Medical Devices* vol. 7, (2) 161-164.

Galectin-3 detection on large-needle aspiration biopsy improves preoperative selection of thyroid nodules: A prospective cohort study.

Carpi A, Rossi G, Coscio GD, Iervasi G, Nicolini A, Carpi F, Mechanick JI and Bartolazzi A. *Annals of Medicine* vol. 42, (1) 70-78.

2009

Wearable kinesthetic systems and emerging technologies in actuation for upperlimb neurorehabilitation.

De Rossi D, Carpi F, Lorussi F, Scilingo EP and Tognetti A. *Proceedings of The 31st Annual International Conference of The Ieee Engineering in Medicine and Biology Society: Engineering The* 6830-6833.

Robotic magnetic manoeuvring of endoscopic video capsules: Phantom tests.

Carpi F. *Ifmbe Proceedings* vol. 25, (6) 47-50.

Electromechanically active polymers: New opportunities for biomaterials and tissue engineering.

Carpi F, Frediani G and De Rossi D. *Ifmbe Proceedings* vol. 25, (10) 53-56.

Non-invasive wet electrocochleography.

Carpi F and Migliorini S. *Ieee Transactions On Biomedical Engineering* vol. 56, (11) 2744-2747.

Non-invasive Wet Electrocochleography.

Carpi F and Migliorini S. *Ieee Trans Biomed Eng* vol. 56, (11 Pt 2) 2744-2747.

Electroretinographic wet electrode.

Carpi F, Benini G, Tomei F, Figliuzzi RM and De Napoli A. *Medical Engineering and Physics* vol. 31, (8) 923-929.

A new concept for dielectric elastomer actuators: Hydrostatic coupling.

Carpi F, Frediani G and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 7362.,

Dielectric elastomer actuators with hydrostatic coupling.

Carpi F, Frediani G and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 7287.,

Carpi F and Pappone C. *Expert Review of Medical Devices* vol. 6, (5) 487-498.

Electroactive elastomeric haptic displays of organ motility and tissue compliance for medical training and surgical force feedback.

Carpi F, Frediani G and De Rossi D. *Ieee Transactions On Biomedical Engineering* vol. 56, (9) 2327-2330.

Concept design of novel bio-inspired distributed actuators for space applications.

Menon C, Carpi F and De Rossi D. *Acta Astronautica* vol. 65, (5-6) 825-833.

Polyurethane unimorph bender microfabricated with Pressure Assisted Microsyringe (PAM) for biomedical applications.

Tartarisco G, Gallone G, Carpi F and Vozzi G. *Materials Science and Engineering C* vol. 29, (6) 1835-1841.

Chapter 1 Emg-Based and Gaze-Tracking-Based Man-Machine Interfaces.

Carpi F and Rossi DD. *International Review of Neurobiology* vol. 86, 3-21.

Biomedical Applications of Electroactive Polymer Actuators.

Carpi F and Smela E. Editors: Carpi F and Smela E. *Wiley*.

Magnetic maneuvering of endoscopic capsules by means of a robotic navigation system.

Carpi F and Pappone C. *Ieee Trans Biomed Eng* vol. 56, (5) 1482-1490.

Preface.

Carpi F and Smela E.

Dynamic Splint-Like Hand Orthosis for Finger Rehabilitation.

Carpi F, Mannini A and De Rossi D. *Biomedical Applications of Electroactive Polymer Actuators*.

Prospects of brain-machine interfaces for space system control.

Menon C, de Negueruela C, Millán JDR, Tonet O, Carpi F, Broschart M, Ferrez P, Buttfield A, Tecchio F, Sepulveda F, Citi L, Laschi C, Tombini M, Dario P, Maria Rossini P and De Rossi D. *Acta Astronautica* vol. 64, (4) 448-456.

EMG-based and gaze-tracking-based man-machine interfaces.

Carpi F and Rossi DD. *Int Rev Neurobiol* vol. 86, 3-21.

Wearable kinesthetic systems and emerging technologies in actuation for upperlimb neurorehabilitation.

De Rossi D, Carpi F, Lorussi F, Scilingo EP and Tognetti A. *Conference Proceedings : ... Annual International Conference of The Ieee Engineering in Medicine and Biology Society. Ieee Engin* vol. 2009, 6830-6833.

2008

Bio-inspired distributed electroactive polymer actuators for possible space applications: Concept design.

Carpi F, Menon C and De Rossi D. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Artificial Muscle Act* vol. 61, 180-185.

Functional materials for wearable sensing, actuating and energy harvesting.

De Rossi D, Carpi F and Galantini F. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Biomedical Applicatio* vol. 57, 247-256.

Artificial muscle actuators using electroactive polymers.

Vincenzini P, Bar-Cohen Y and Carpi F. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Artificial Muscle Act* vol. 61,,

Enhancing the electro-mechanical response of Maxwell stress actuators.

Gallone G, Carpi F, Galantini F, De Rossi D and Levita G. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Artificial Muscle Act* vol. 61, 46-52.

Contractile and buckling actuators based on dielectric elastomers: Devices and applications.

Carpi F, Frediani G, Mannini A and De Rossi D. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Artificial Muscle Act* vol. 61, 186-191.

Silicone made contractile dielectric elastomer actuators inside 3-Tesla MRI environment.

Carpi F, Khanicheh A, Mavroidis C and De Rossi D. *2008 Ieee/Rsj International Conference On Intelligent Robots and Systems, Iros* 137-142.

Tunable dielectric resonator antennas using voltage-controlled mechanical deformation.

Mahanfar A, Menon C, Vaughan RG, Carpi F, Parameswaran M and Daheshpour K. *Cimtec 2008 - Proceedings of The 3rd International Conference On Smart Materials, Structures and Systems - Embodying Intelligenc* vol. 56, 614-619.

Contractile monolithic linear actuators.

Carpi F and De Rossi D.

Enhancing the dielectric permittivity of elastomers.

Carpi F, Gallone G, Galantini F and De Rossi D.

Buckling actuators with integrated displacement sensor.

Carpi F, Fantoni G, Frediani G and De Rossi D.

Magnetic robotic manoeuvring of gastrointestinal video capsules: preliminary phantom tests.

Carpi F and Pappone C. *Biomedicine and Pharmacotherapy* vol. 62, (8) 546-549.

Elastomeric contractile actuators for hand rehabilitation splints.

Carpi F, Mannini A and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 6927,,

Enhancement of the electromechanical transduction properties of a silicone elastomer by blending with a conjugated polymer.

Carpi F, Gallone G, Galantini F and De Rossi D. *Proceedings of Spie - The International Society For Optical Engineering* vol. 6927,,

MRI compatibility of silicone-made contractile dielectric elastomer actuators.

Carpi F, Khanicheh A, Mavroidis C and De Rossi D. *Ieee/Asme Transactions On Mechatronics* vol. 13, (3) 370-374.

Dielectric Elastomers as Electromechanical Transducers.

Carpi F. Editors: Carpi F, De Rossi D, Kornbluh R, Pelrine R and Sommer-Larsen P. *Elsevier Science*.

Silicone-poly(hexylthiophene) blends as elastomers with enhanced electromechanical transduction properties.

Carpi F, Gallone G, Galantini F and De Rossi D. *Advanced Functional Materials* vol. 18, (2) 235-241.

2007

Actuators in adaptronics.

Janocha H, Leletty R, Claeysen F, Engdahl G, Hesselbach J, Bulloug WA, Carlson JD, Mazzoldi A, Carpi F, De Rossi D, Seidel H, Kuhnen K and Würtz T. *Adaptronics and Smart Structures: Basics, Materials, Design and Applications*.

Controlled navigation of endoscopic capsules: Concept and preliminary experimental investigations.

Carpi F, Galbiati S and Carpi A. *Ieee Transactions On Biomedical Engineering* vol. 54, (11) 2028-2036.

Percutaneous large-needle aspiration biopsy histology of palpable thyroid nodules: technical and diagnostic performance.

Carpi A, Nicolini A, Marchetti C, Iervasi G, Antonelli A and Carpi F. *Histopathology* vol. 51, (2) 249-257.

Bioinspired actuation of the eyeballs of an android robotic face: concept and preliminary investigations.

Carpi F and De Rossi D. *Bioinspiration & Biomimetics* vol. 2, (2) S50-S63.

Folded dielectric elastomer actuators.

Carpi F, Salaris C and De Rossi D. *Smart Materials & Structures* vol. 16, (2) S300-S305.

Martian jumping rover equipped with electroactive polymer actuators: A preliminary study.

Carpi F, Tralli A, De Rossi D and Gaudenzi P. *Ieee Transactions On Aerospace and Electronic Systems* vol. 43, (1) 79-92.

Dielectric constant enhancement in a silicone elastomer filled with lead magnesium niobate-lead titanate.

Gallone G, Carpi F, De Rossi D, Levita G and Marchetti A. *Materials Science & Engineering C-Biomimetic and Supramolecular Systems* vol. 27, (1) 110-116.

2006

Magnetic shells for gastrointestinal endoscopic capsules as a means to control their motion.

Carpi F, Galbiati S and Carpi A. *Biomedicine & Pharmacotherapy* vol. 60, (8) 370-374.

Non-invasive electroretinography.

Carpi F and Tomei F. *Biomedicine & Pharmacotherapy* vol. 60, (8) 375-379.

Realization of conducting polymer actuators using a controlled volume microsyringe system.

Vozzi G, Carpi F and Mazzoldi A. *Smart Materials & Structures* vol. 15, (2) 279-287.

2005

Helical dielectric elastomer actuators.

Carpi F, Migliore A, Serra G and De Rossi D. *Smart Materials & Structures* vol. 14, (6) 1210-1216.

Electroactive polymer-based devices for e-textiles in biomedicine (vol 9, pg 295, 2005).

Carpi F and De Rossi D. *Ieee Transactions On Information Technology in Biomedicine* vol. 9, (4) 574-574.

Polymer based interfaces as bioinspired 'smart skins'.

De Rossi D, Carpi F and Scilingo EP. *Advances in Colloid and Interface Science* vol. 116, (1-3) 165-178.

Improvement of electromechanical actuating performances of a silicone dielectric elastomer by dispersion of titanium dioxide powder.

Carpi F and De Rossi D. *Ieee Transactions On Dielectrics and Electrical Insulation* vol. 12, (4) 835-843.

Electroactive fabrics and wearable man-machine interfaces.

De Rossi D, Carpi F, Lorussi F, Scilingo EP, Tognetti A and Paradiso R. *Wearable Electronics and Photonics*.

2004**Dielectric elastomer cylindrical actuators: electromechanical modelling and experimental evaluation.**

Carpi F and De Rossi D. *Materials Science & Engineering C-Biomimetic and Supramolecular Systems* vol. 24, (4) 555-562.

Polymers responding to electrical or electrochemical stimuli for linear actuators.

Mazzoldi A, Carpi F and De Rossi D. *Annales De Chimie-Science Des Materiaux* vol. 29, (6) 55-64.

2003**Electroactive fabrics and wearable biomonitoring devices.**

De Rossi D, Carpi F, Lorussi F, Mazzoldi A, Paradiso R, Scilingo EP and Tognetti A. *Autex Research Journal* vol. 3, (4) 180-185.

Electromechanical characterisation of dielectric elastomer planar actuators: comparative evaluation of different electrode materials and different counterloads.

Carpi F, Chiarelli P, Mazzoldi A and De Rossi D. *Sensors and Actuators a-Physical* vol. 107, (1) 85-95.

2001**Introduction.**

GRANVILLE BE and Oppenheimer P. *Russiaâ€™S Post-Communist Economy*. Editors: Granville B and Oppenheimer P. *Oxford University Press*.