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D.M. Espino, G.R. Bicknell, R.T. Bryan



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Viscoelastic Properties of Human Bladder Tumours

S. C. Barnes^a, B. M. Lawless^a, D. E. T. Shepherd^{a,*}, D. M. Espino^a, G. R. Bicknell^b,
R. T. Bryan^b

^aSchool of Mechanical Engineering, University of Birmingham, B15 2TT

^bInstitute of Cancer & Genomic Sciences, University of Birmingham, B15 2TT

Abstract

The urinary bladder is an organ which facilitates the storage and release of urine. The bladder can develop tumours and bladder cancer is a common malignancy throughout the world. There is a consensus that there are differences in the mechanical properties of normal and malignant tissues. However, the viscoelastic properties of human bladder tumours at the macro scale have not been previously studied. This study investigated the viscoelastic properties of ten bladder tumours, which were tested using dynamic mechanical analysis at frequencies up to 30 Hz. The storage modulus ranged between 0.052 MPa and 0.085 MPa while the loss modulus ranged between 0.019 MPa and 0.043 MPa. Both storage and loss moduli showed frequency dependent behaviour and the storage modulus was higher than the loss modulus for every frequency tested.

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