

Abstract Submitted  
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**A Novel Liquid Crystal Elastomer with Large Spontaneous Length Changes** PATRICIA CLADIS, ALCT, Inc., SIMON KRAUSE, YUSRIL YUSUF<sup>1</sup>, Gadjah Mada University, Yogyakarta, 55281, Indonesia, SHOHEI HASHIMOTO<sup>2</sup>, Kyushu University, Fukuoka 819-0395, Japan, LEONID FEL<sup>3</sup>, Technion-IIT, 32000 Haifa, Israel, SHOICHI KAI<sup>4</sup>, Kyushu University, Fukuoka 819-0395, Japan, HEINO FINKELMANN, Makromolekulare Chemie, Freiburg University, 79104 Freiburg, Germany — An order parameter describes an elastomer where a liquid crystal is cross linked at a temperature  $T_L$  far from its clearing temperature. At  $T_L$ , there is a first order constant density phase transition where the order parameter vanishes and the elastomer has cubic symmetry. Below  $T_L$  it is an icosahedral nematic and above a biaxial nematic. This theory quantitatively accounts for spontaneous shape change, nonlinear elasticity and gelation dynamics in a novel liquid crystal elastomer.

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