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**Qui-Qiang Chen, Apala Majumdar, Dehua Wang and Rongfang Zhang\***  
(roz14@pitt.edu). *Global Existence and Regularity for the Active Liquid Crystal System.*

We study the hydrodynamics of active liquid crystals in the Beris-Edwards hydrodynamic framework with the Landau-de Gennes Q-tensor order parameter to describe liquid crystalline ordering. For the incompressible case, the existence of global weak solutions in two and three spatial dimensions is established and the higher regularity of the weak solutions and the weak-strong uniqueness are also obtained by the Littlewood-Paley decomposition in dimension two. The existence of global weak solutions for the inhomogeneous case and compressible case is also obtained. (Received March 21, 2017)