1126-53-52   **Magdalena D Toda***, Texas Tech University, Dept Mathematics and Statistics, Lubbock, TX 79410, and **Eugenio Aulisa**. *Generalized bending energies and protein folding.*

This report studies certain generalizations of Willmore energy functionals (bending energies with structural constraints). The critical points of these functionals have special applications to secondary structures in proteins, and in particular to alpha coils and beta barrels. Symmetries will be studied from a geometric and topological viewpoint. This work is at the interface between differential geometry, boundary value problems in PDE and numerical applications. (Received December 20, 2016)