

SPONTANIOUS REFOLDING OF AMYLOID FIBRILS. Igor K. Lednev and Dmitry Kurouski, Department of Chemistry, University at Albany, SUNY, 1400 Washington Ave., Albany, NY 12222.

Amyloid fibrils associated with many neurodegenerative diseases are considered to be energetically most favorable form of proteins. Here we report that a small pH change initiates spontaneous transformation of insulin fibrils from one polymorph to another. As a result, fibril supramolecular chirality overturns both accompanying morphological and structural changes. Mature fibrils prepared from apo- α -lactalbumin spontaneously refold from one polymorph to another as a result of a mild alteration in solution temperature and salinity. This discovery changes the very concept of the extraordinary stability of amyloid fibrils and presages a new approach for potentially regulating the biological activity of fibrils and their associated toxicity.