An intramolecular O-N migration reaction on gold surfaces: Toward the preparation of well-defined amyloid surfaces

Boussert, Stephanie

Diez-Perez, Ismael

Kogan, Marcelo J.

De Oliveira, Eliandre

Giralt, Ernest

Amyloids are a family of self-aggregating proteins implicated in various central nervous system disorders, including Alzheimer's disease (AD). It is thought that prefibrillar soluble forms of amyloid peptides, including oligomers, may be the main pathogenic factor in AD. Herein we describe the fabrication of well-defined, functionalized, monomeric ?-amyloid peptide surfaces for studying protein-protein interactions. We first prepared a nonaggregating analogue of the ?-amyloid peptide and then attached it to a gold surface covered with a self-assembled monolayer (SAM) of alkanethiols. After attachment, the native form of the ?-amyloid peptide (A?40) was obtained by surface-level intramolecular O-N migration. The surface was characterized by atomic force microscopy (AFM) and self-assembled monolayer for matrix-assisted laser desorption/ionization timeof-flight mass spectrometry (SAMDI-TOF MS). The interaction between the surface-bound A?40 and monoclonal anti-A?40 antibody was tracked by