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Hydrogen bonding in Alzheimer's amyloid- β fibrils probed by $^{15}\text{N}\{^{17}\text{O}\}$ REAPDOR solid-state NMR spectroscopy

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Abstract

An exclusive label: $^{15}\text{N}\{^{17}\text{O}\}$ REAPDOR NMR was used to validate intermolecular C $^{17}\text{O}=\text{H}-^{15}\text{N}$ hydrogen bonding in Ac-A β (16-22)-NH $_2$ (see scheme) and A β (11-25) amyloid fibrils, which are associated with Alzheimer's disease, by selectively labeling them with ^{17}O and ^{15}N . This method was effective for confirming the structure of these fibrils, and could be useful for a number of other biological samples. Copyright © 2012 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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Keywords

$^{15}\text{N}\{^{17}\text{O}\}$ REAPDOR NMR, amyloid- β fibrils, hydrogen bonds, NMR spectroscopy, solid-state NMR