

Structures of the Most Twisted Thioamide and Selenoamide: Effect of Higher Chalcogens of Twisted Amides on N–C(X) Resonance

Autorzy

Qun Zhao

Guangchen Li

Pradeep Nareddy

Frank Jordan

Roger Lalancette

Roman Szostak

Michał Szostak

Rok wydania

2022

Czasopismo

Angewandte Chemie -
International Edition

Numer woluminu

61

Strony

e202207346/1-e202207346/6

DOI

10.1002/anie.202207346

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Amide bond replacement with planar isosteric chalcogen analogues has an important implication for the properties of the N–C(X) linkage in structural chemistry, biochemistry and organic synthesis. Herein, we report the first higher chalcogen derivatives of non-planar twisted amides. The synthesis of twisted thioamide in a versatile system has been accomplished by direct thionation without cleavage of the σ N–C bond. The synthesis of twisted selenoamide has been accomplished by selenation with Woollins' reagent. The structures of higher chalcogen analogues of non-planar amides were unambiguously confirmed by X-ray crystallography. Reactivity studies were conducted to determine the effect of isologous N–C(O) to N–C(X) replacement on the properties of the amide linkage. Computational studies were employed to evaluate structural and energetic parameters of amide bond alteration in higher chalcogen amides. The study provides the first experimental evidence on the effect of chalcogen isologues on the structural and electronic properties of the non-planar amide N–C(X) linkage.

Słowa kluczowe

Amides, Bond Lengths, Conformational Analysis, Structure Elucidation, Winkler–Dunitz Parameters

Adres publiczny

<http://dx.doi.org/10.1002/anie.202207346>

Strona internetowa wydawcy

onlinelibrary.wiley.com

Plik został wygenerowany dnia 2026-08-26 04:10:06

Adres w repozytorium <https://old.chem.uni.wroc.pl/pl/repozytorium/SiWFk1G>.