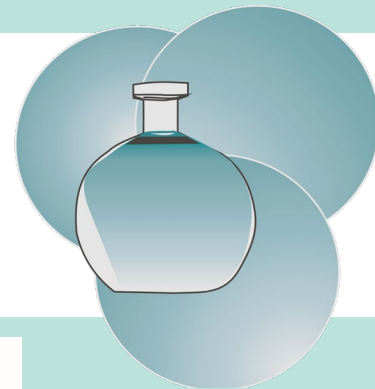


Fakultät für Naturwissenschaften
Institut für Chemie



lädt ein

gemeinsam mit der Gesellschaft
Deutscher Chemiker
zum



Vortrag
von Frau

**Prof. Nadja
Simeth**

*Institute for Organic and
Biomolecular Chemistry*

**Georg-August-
University of
Göttingen**

**“Folding and
Manipulating
Peptides with
Light”**

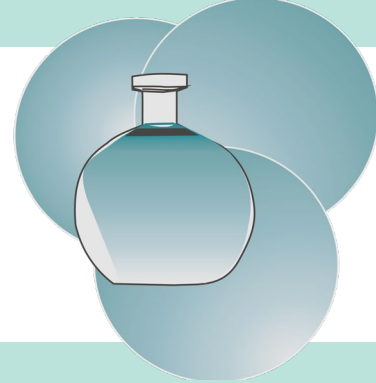
am: 22. Mai 2025
um: 16:00 Uhr
wo: im Raum 1/232

Gäste sind herzlich willkommen!



TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

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Biomolecular Chemistry*
**Georg-August-University
of Göttingen**

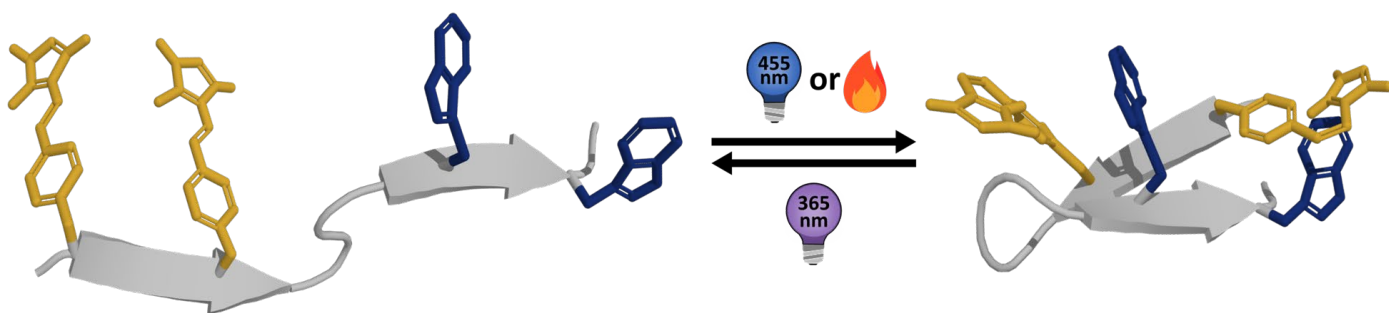


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Folding and Manipulating Peptides with Light

Peptides and Proteins are biomacromolecules that drive the cellular machinery. Perfectly adapted to their individual tasks, they can produce energy, form and break bonds, fold and unfold other biomacromolecules, and move and divide cells. Consequently, hijacking the natural machinery would be a powerful approach to obtain control over cellular processes or create new ones in artificial systems. In this context, light has been recognised as a superb external stimulus to photocontrol the shape and function of biomacromolecules via small, light-responsive entities that undergo a structural change upon irradiation, generating different functional states from a single molecular unit.[1,2]

Here, we exploit the fact that secondary structure motifs dictate their properties and supramolecular interactions in proteins and peptides and are highly sensitive to minimal structural changes. We incorporate light-responsive linkers and switches as unnatural amino acids (UAAs) into peptide helices and hairpin structures to reversibly (un)fold them by light.[3,4, and unpublished work] We will show how we can use these molecules to control supramolecular interactions, including disease-correlated peptide aggregation with unprecedented spatiotemporal resolution using a combination of spectroscopy and microscopy techniques.



References

1. Simeth, N. A.; Crespi, S.; *Photochemistry* **2021**, 344–375.
2. Volaric, J.; Szymanski, W.; Simeth, N. A.; Feringa, B. L.; *Chem. Soc. Rev.* **2021**, 12377–12449.
3. Corbet, B. P.; Schlüter, J. M.; Cotroneo, E. R.; Crespi, S.; Simeth, N. A.; *Eur. J. Org. Chem.* **2023**, e202201140.
4. Lace, I.; Bazzi, S.; Uranga, J.; Schirmacher, A.; Diederichsen, U.; Mata, R.; Simeth, N. A.; *ChemBioChem* **2023**, e202300270