



**FKKT**

UNIVERZA V LJUBLJANI  
Fakulteta za kemijo in kemijsko tehnologijo

VABILO NA PREDAVANJE  
V OKVIRU DOKTORSKEGA ŠTUDIJA  
KEMIJSKE ZNANOSTI / INVITATION TO THE  
LECTURE WITHIN DOCTORAL PROGRAMME IN  
CHEMICAL SCIENCES

**Prof. Dr. Nathalie M. Grob**

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z naslovom / title:

**Charting the unnatural space for peptide drug  
discovery**

**v sredo, 6. 5. 2026 ob 15. uri**  
**v predavalnici 1** v 1. nadstropju Fakultete za kemijo  
in kemijsko tehnologijo, Večna pot 113 /  
**on Wednesday, 6. 5. 2026 at 15.00**  
**in lecture room 1**, 1st floor at the Faculty of  
Chemistry and Chemical Technology, Večna pot 113

*Vljudno vabljeni! / Kindly invited!*



## **Abstract:**

Peptides are well suited for the therapeutic modulation of protein–protein interactions as they can selectively engage with the extended binding surfaces that are often inaccessible to small molecules. However, the broad clinical application of peptides is often challenged by their metabolic instability and rapid elimination.

One strategy to address these challenges is irreversible, covalent target binding. We have developed electrophile scanning as an approach to systematically identify reactivity hotspots on protein surfaces, enabling the design of covalent peptide binders. While effective, this one-by-one strategy is labor-intensive for larger peptides and relies on structural information.

This lecture will present our efforts to overcome these limitations using high-throughput affinity selection–mass spectrometry (AS-MS) with synthetic, combinatorial peptide libraries that exploit a greatly increased chemical diversity through the incorporation of non-natural amino acids. I will further highlight our work on peptide-encoded libraries of small molecules and discuss recent advances that expand their application in drug discovery. Together, these approaches provide a scalable framework for identifying ligands with improved properties and novel mechanisms of action in early phases of drug discovery.