

lädt ein

gemeinsam mit der Gesellschaft
Deutscher Chemiker
zum

Vortrag
von Frau

Prof. Dr.
Stephanie
Kath-Schorr
Organische Chemie
Universität zu Köln



**“Beyond the Natural
Alphabet: Chemically
Modified Nucleotides
and Nucleic Acids
across Biological
Systems”**

am: 03. Dezember 2026

um: 09:30 Uhr im

WO: Raum A12.232

Gäste sind herzlich willkommen!



**Prof. Dr. Stephanie
Kath-Schorr**

Organische Chemie
Universität zu Köln



“Beyond the Natural Alphabet: Chemically Modified Nucleotides and Nucleic Acids across Biological Systems”

Expanding the genetic alphabet beyond the canonical nucleobases provides powerful opportunities to increase information density and to access new chemical functionality in nucleic acids. Our work integrates organic synthesis with chemical biology to develop and apply chemically modified nucleotides and nucleic acids across biological systems. We employ hydrophobic unnatural base pairs to enable the site-specific incorporation of functional groups into DNA and RNA, facilitating labeling, tracking, and functional interrogation of RNAs in vitro and in cells. These approaches allow the investigation of RNA structure, dynamics, and translation, as well as the introduction of spin labels for EPR spectroscopy. We further explore xeno nucleic acids, in particular threose nucleic acid (TNA) with modifications in multiple structural elements to access novel properties. A central aspect of our work is the design and synthesis of next generation unnatural base pairs, including a new system based on halogen bonding. Finally, we extend the concept of modified nucleosides to plant systems, where they can act as chemical triggers of immune responses.

