

# **Advanced Vibrational Spectroscopies – from Developments in Physical Chemistry to Biomedical Applications**

**849. WE-Heraeus-Seminar**

**22 Feb - 26 Feb 2026  
at the Physikzentrum Bad Honnef/Germany**

The WE-Heraeus Foundation supports research and education in science, especially in physics.  
The Foundation is Germany's most important private institution funding physics.

**WILHELM UND ELSE  
HERAEUS-STIFTUNG**



# Program

## Sunday, February 22, 2026

17:00 – 21:00 Registration

18:00 – 21:00 *BUFFET SUPPER*

## Monday, February 23, 2026

08:00 *BREAKFAST*

08:55 – 09:10 Scientific organizers **Opening, Welcome and Intro**

09:10 – 10:20 Steven Boxer **Vibrational Stark effect spectroscopy measures local electric fields in diverse environments**

10:20 – 10:50 *COFFEE BREAK*

10:50 – 11:40 Thomas Elsaesser **Electric interactions and vibrational excitations in liquids and proteins probed by ultrafast terahertz methods**

11:40 – 12:30 Peter Vöhringer **The invisible made visible with invisible light: Photochemical dynamics of transition metal complexes**

12:30 *LUNCH*

# Program

**Monday, February 23, 2026**

|               |                     |   |
|---------------|---------------------|---|
| 14:00 – 14:50 | Marius Horch        | <b>2D-IR Spectroscopy of Bioorganometallic Targets</b>  |
| 14:50 – 15:40 | Martina Havenith    | <b>Terahertz calorimetry spotlights the role of water in biological processes</b>             |
| 15:40 – 16:00 | Lorenz Mattes       | <b>Temperature-jump dual-comb spectroscopy for time-resolved studies of peptide folding</b>   |
| 16:00 – 16:30 | <i>COFFEE BREAK</i> |   |
| 16:30 – 17:20 | Joachim Pupeza      | <b>Field-Resolved Spectroscopy for Biology and Medicine</b>                                   |
| 17:20 – 18:10 | Thomas Ebbesen      | <b>Manipulating Matter by Vibrational Strong Coupling to the Vacuum Electromagnetic Field</b> |
| 18:30         | <i>DINNER</i>       |   |

# Program

**Tuesday, February 24, 2026**

|               |  |   |
|---------------|--|---|
| 08:00         | <i>BREAKFAST</i>                         |   |
| 08:55 – 09:10 | Intro                                    |   |
| 09:10 – 10:00 | Hatice Altug                             | <b>Nanophotonic metasurfaces for<br/>surfaced enhanced spectroscopy,<br/>biosensing and microarrays</b>   |
| 10:00 – 10:20 | Gergo Peter Szekeres                     | <b>Dissecting the local and<br/>macromolecular properties of<br/>glycosaminoglycans with infrared<br/>spectroscopy</b>                                |
| 10:20 – 10:50 | <b>Conference Photo and COFFEE BREAK</b> |   |
| 10:50 – 11:40 | Alexander Fellows                        | <b>Azimuthal-scanning and phase-<br/>resolved vibrational sum-frequency<br/>microscopy</b>  |
| 11:40 – 12:30 | Patrycja Kielb                           | <b>Raman spectroscopy of UV-absorbing<br/>chromophores - from UV resonance<br/>Raman towards UV surface-enhanced<br/>resonance Raman spectroscopy</b> |
| 12:30         | <i>LUNCH</i>                             |   |

# Program

**Tuesday, February 24, 2026**

|                                   |  |   |
|-----------------------------------|--|---|
| 14:00 – 14:50                     | Zsuzsanna Heiner   | <b>Real-time and label-free monitoring of enzymatic cleavage at a model membrane interface</b>                |
| 14:50 – 15:40                     | Tilmann Kottke   | <b>Time-resolved infrared spectroscopy on soluble receptors in living cells</b>                               |
| 15:40 – 16:00                     | Izabella Brand   | <b>Spectroelectrochemical characterization of rhodopsin membrane protein in reconstituted model membranes</b> |
| <b>16:00 – 16:30 COFFEE BREAK</b> |  |   |
| 16:30 – 18:30                     | <b>Poster session</b>  |   |
| 18:30                             | <i>HERAEUS DINNER at the Physikzentrum<br/>(cold and warm buffet, with complimentary drinks)</i> |   |

# Program

**Wednesday, February 25, 2026**

|               |                          |  |
|---------------|--------------------------|--|
| 08:00         | <i>BREAKFAST</i>         |  |
| 08:55 – 09:10 | Intro                    |  |
| 09:10 – 10:00 | Mischa Bonn              | <b>Molecular mechanics of aqueous interfaces from surface vibrational spectroscopy</b>                             |
| 10:00 – 10:20 | Karolina Augustyniak     | <b>The fate of stem cell: FTIR and Raman imaging-based strategy to probe cell differentiation</b>                  |
| 10:20 – 10:50 | <i>COFFEE BREAK</i>      |  |
| 10:50 – 11:40 | Rainer Hillenbrand       | <b>Scattering-type near-field optical nanospectroscopy</b>   |
| 11:40 – 12:30 | Janina Kneipp            | <b>Spectroscopy in the local fields of plasmonic structures for the characterization of biomolecules and cells</b> |
| 12:30         | <i>LUNCH</i>             |  |
| 14:00 – 14:50 | Francesco Simone Ruggeri | <b>Nano-Chemical Imaging &amp; Spectroscopy of Protein Self-assembly in Neurodegeneration</b>                      |
| 14:50 – 15:40 | Caitlin Davis            | <b>Optical photothermal infrared imaging using metabolic probes in biological systems</b>                          |
| 15:40 – 16:10 | <i>COFFEE BREAK</i>      |  |

# Program

## Wednesday, February 25, 2026

|               |                       |  |
|---------------|-----------------------|--|
| 16:10 – 17:00 | Daniela Täuber        | <b>Pioneering biomedical application of high-precision mid-IR photoinduced force microscopy (PiF-IR)</b> |
| 17:00 – 17:50 | Hervé Rigneault       | <b>Super-resolved wide field multiphoton and coherent Raman imaging using speckle light</b>              |
| 17:50 – 18:10 | Scientific organizers | <b>Poster Awards</b><br><b>Concluding remarks</b>  |
| 18:30         | <i>DINNER</i>         |  |

## Thursday, February 26, 2026

08:00 *BREAKFAST*

**End of seminar and departure**