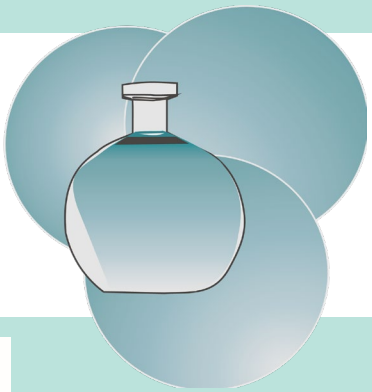
Fakultät für Naturwissenschaften

Institut für Chemie



lädt ein

gemeinsam mit der Gesellschaft Deutscher Chemiker zum

GDCh
Gesellschaft Deutscher Chemiker

Vortrag

von Herrn

Prof. Dr. Florian Kraus

Philipps-Universität Marburg
Fachbereich Chemie, Anorganische Chemie, Fluorchemie

“On fluorine and other much more reactive species”

am: **Donnerstag, 13.11.2025**

um: 09:30 Uhr

wo: im Raum 1/232

Gäste sind herzlich willkommen!

TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

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On fluorine and other much more reactive species

To set the stage we start with videos showing the extreme reactivity of F_2. We then present insights into the chemical synthesis of fluorine which had long thought to be impossible. We proceed to the chemistry of the halogen fluorides and show examples of the chemistry of BrF_5, explosions and peculiar novel anions we have obtained.

We venture on to platinum hexafluoride, which is known for its enormous oxidizing power. It gained its popularity mainly due to its ability to oxidize Xe, forming the first noble gas compound "$XePtF_6$". In addition to Xe, PtF_6 is also able to oxidize various other compounds whose oxidation seemed impossible at the time. For example, NF_3 or ClF_5 can be oxidized to the coordinatively saturated cations $[NF_4]^+$ or $[ClF_6]^+$. However, the formation of $[BrF_6]^+$ by the reaction of BrF_5 and PtF_6 is not possible. To oxidize BrF_5, even stronger oxidizing agents such as $[KrF]^+$ or $[NiF_3]^+$ generated in situ are required.

We show that RuF_6 is able to oxidize all known halogen pentafluorides XF_5 (X = Cl, Br, I) at room temperature to the respective $[XF_6]^+$ salts and that it even oxidizes PtF_4 and PtF_5 back to PtF_6. Therefore, RuF_6 is more reactive than PtF_6 under the investigated conditions.

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