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New erbium (3+) hexafluoroacetylacetonates with spirocyclic photochromes: synthesis, structure, properties

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SINGLE-MOLECULE MAGNET

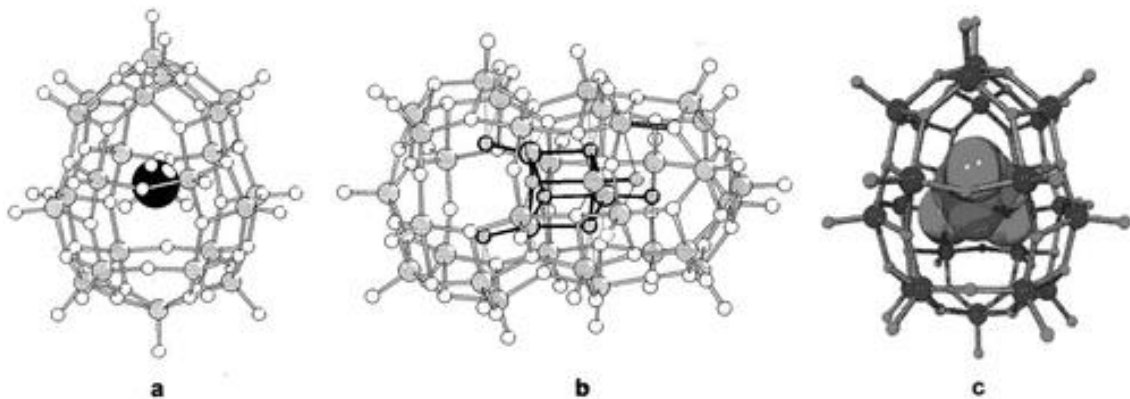
Implementation of qubits
for quantum computing

Parallel
Computing at a
Much Faster
Speed

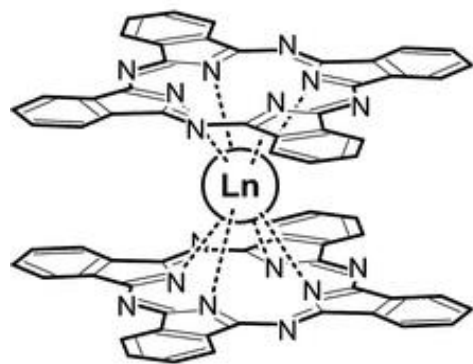
Storage devices

More efficient
storage of
information
compared to the
binary system

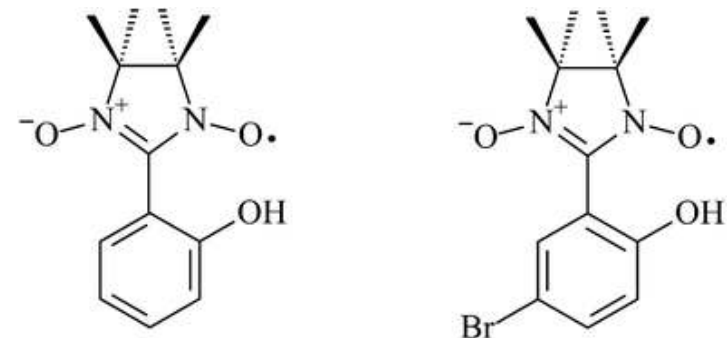
SINGLE-MOLECULE MAGNET DESIGN



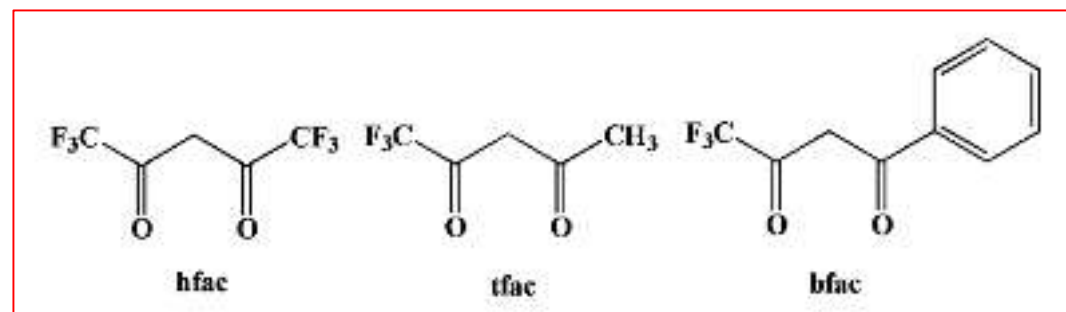
Polyoxometalates



Phthalocyanines

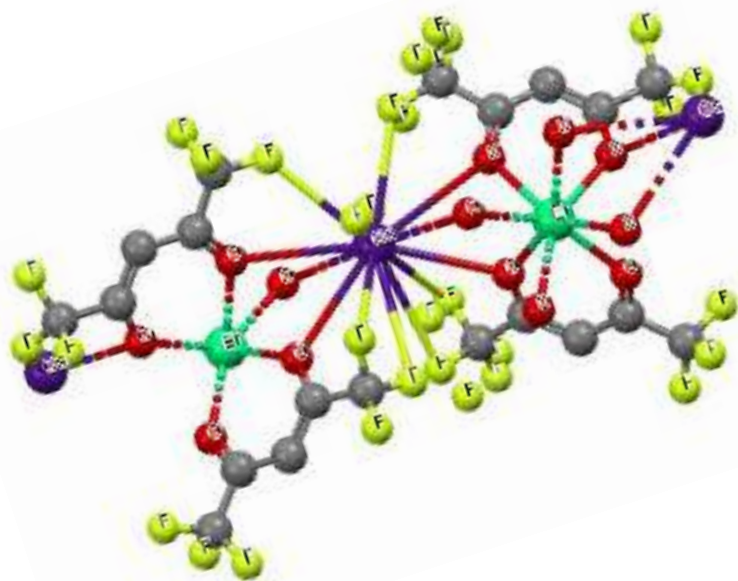


Nitroxyl-nitroxyl radicals

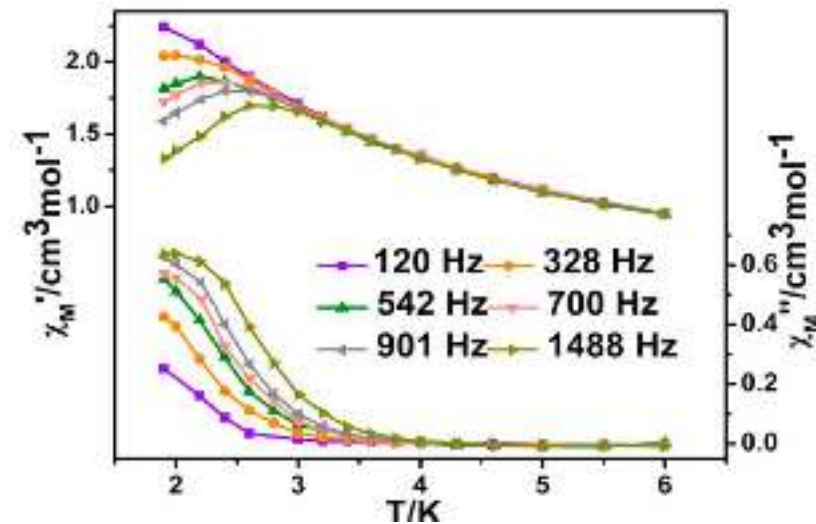
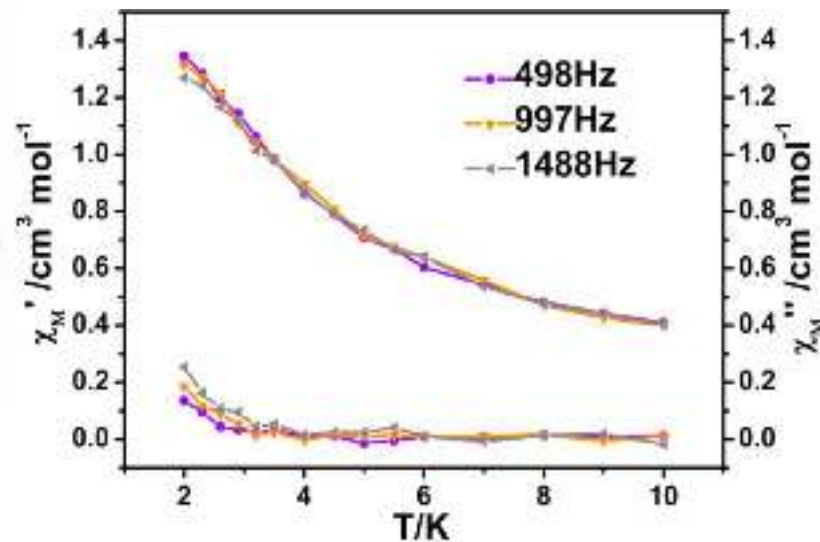


β -diketones

SQUID MAGNETOMETRY



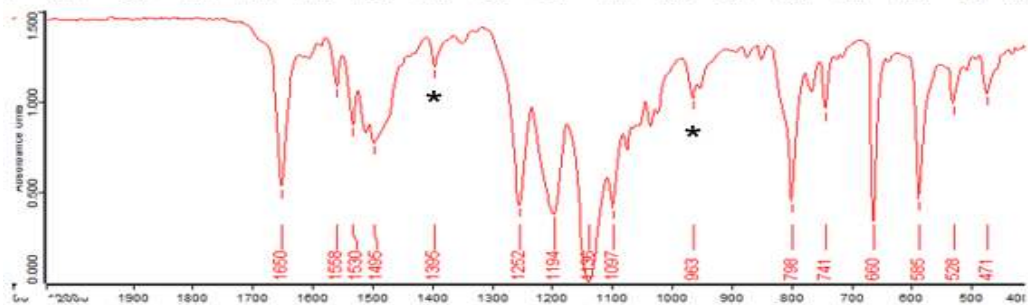
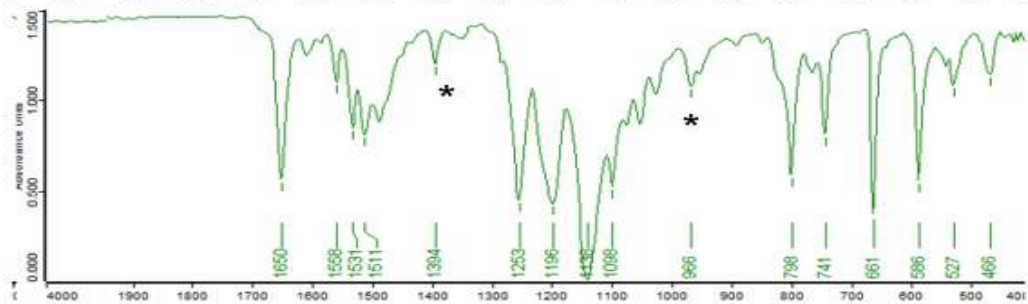
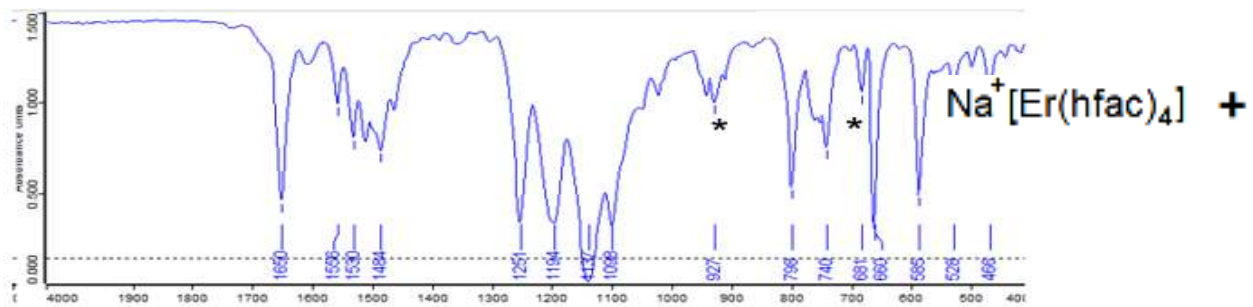
Fragment of one-dimensional chain in structures **Cs** salt



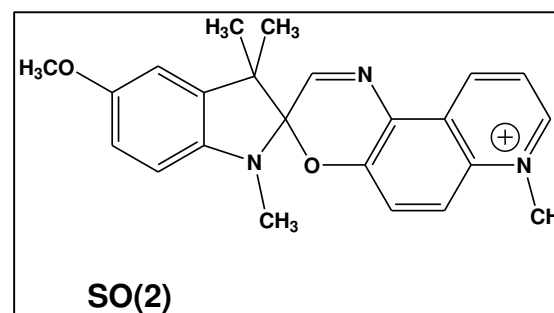
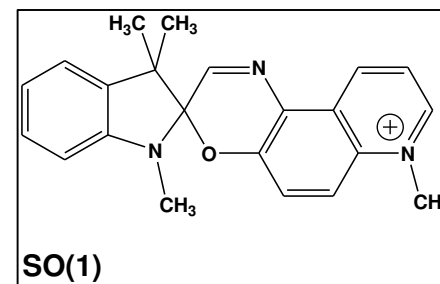
χ_M' , χ_M'' versus temperature plots for **Cs** salt and **K** salt under 1 kOe field.

PURPOSE OF WORK

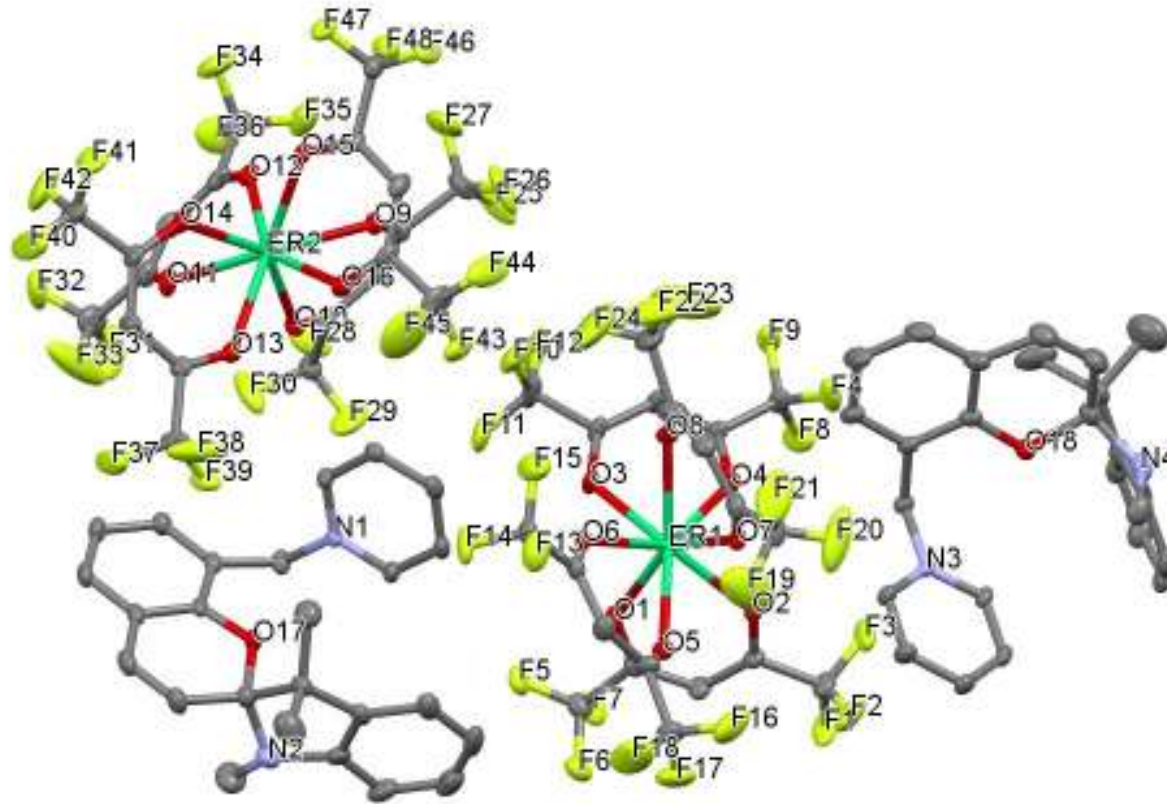
Synthesis and study of the properties of polyfunctional compounds - complexes of erbium hexafluoroacetylacetonate with photochromic cations of the spirocyclic series.



* отмечены характерные полосы поглощения ф/х лигандов

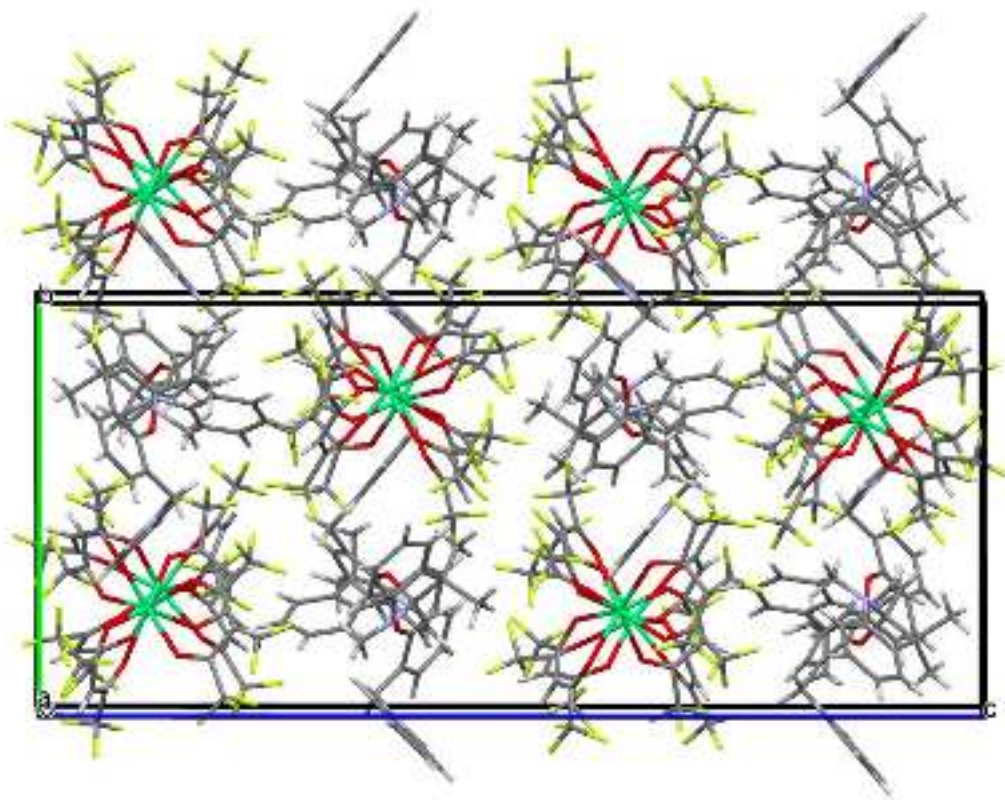


X-RAY DIFFRACTION ANALYSIS

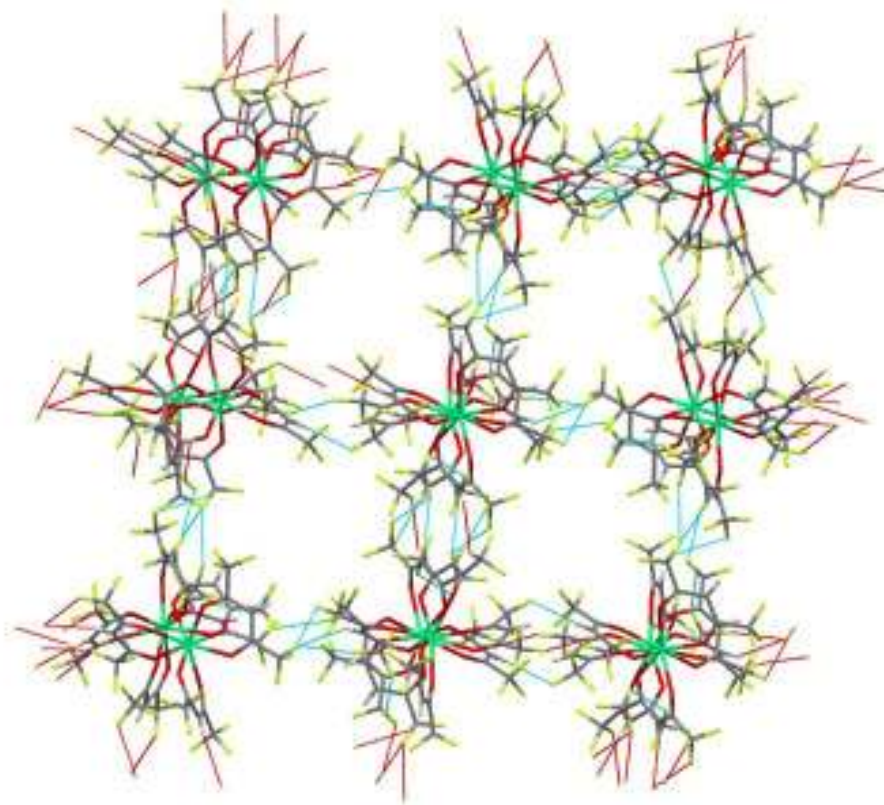


Molecular structure of $SP^+[Er(hfac)_4]$

X-RAY DIFFRACTION ANALYSIS

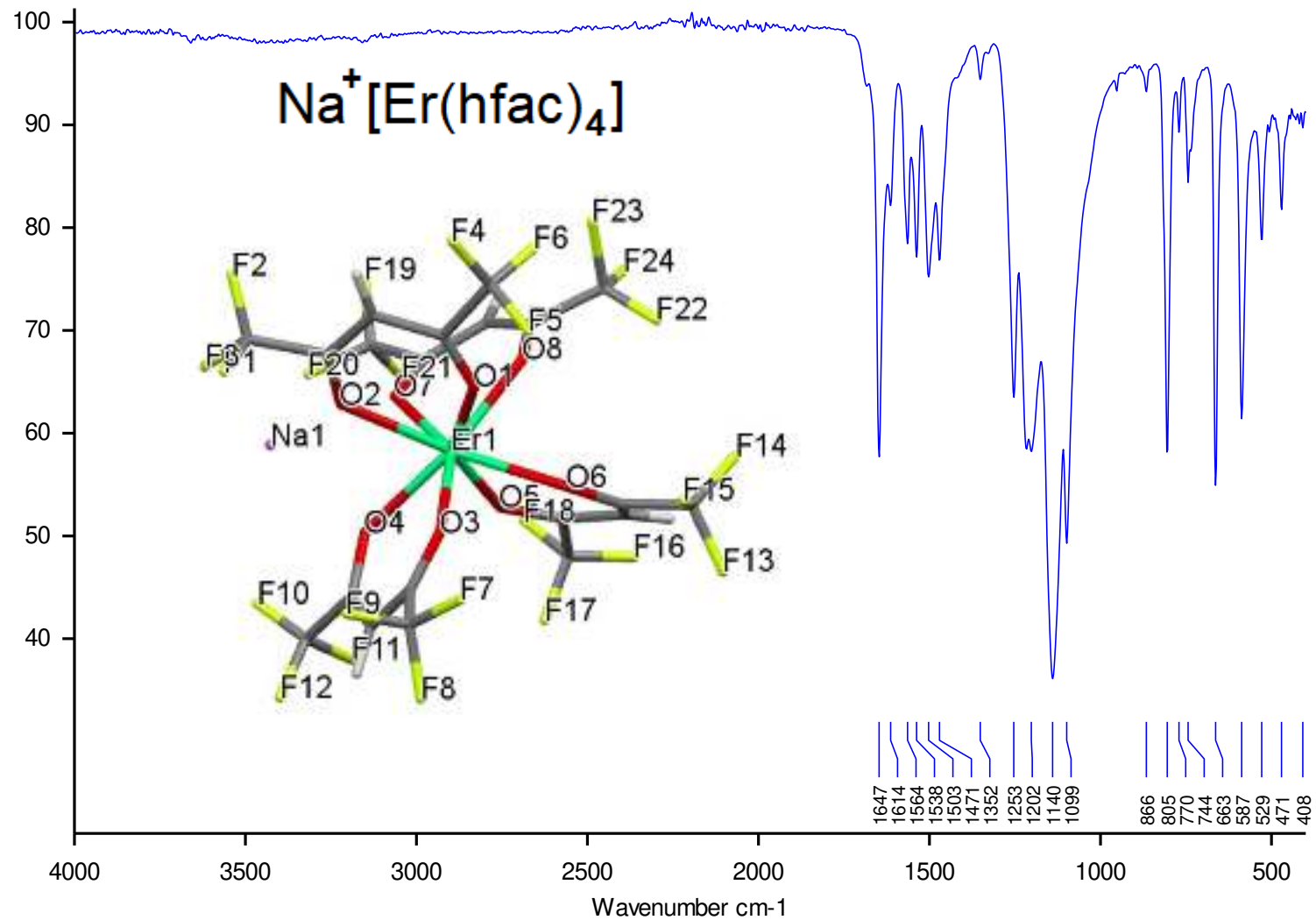


Crystal packaging for $SP^+[Er(hfac)_4]$

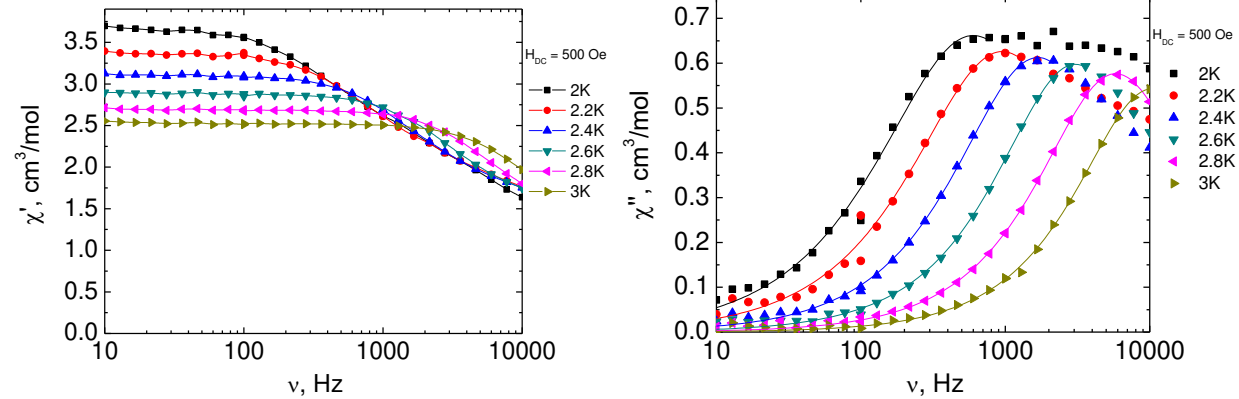
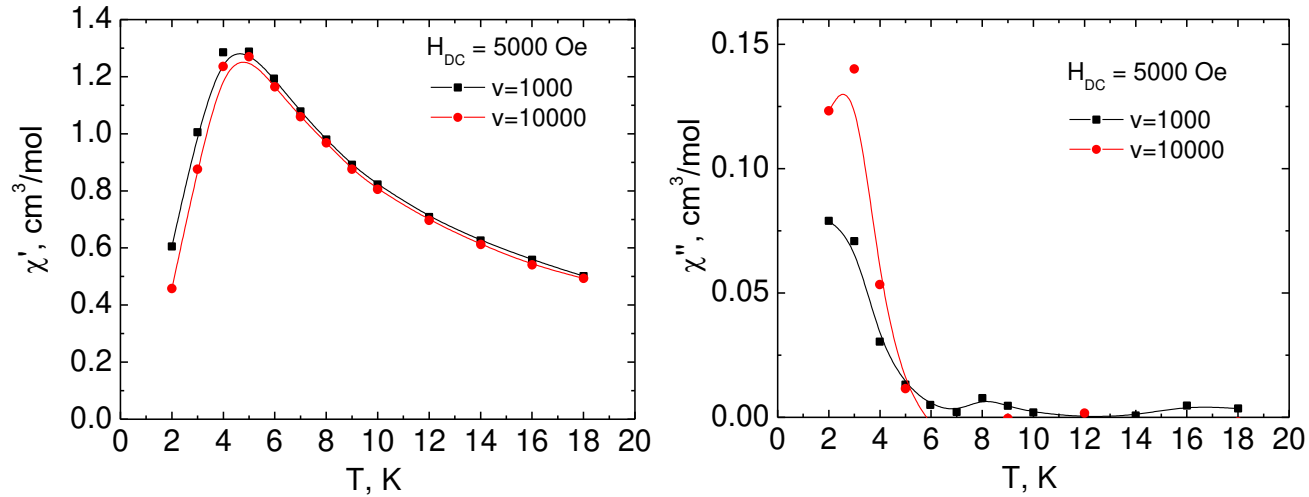


Anion layer for $SP^+[Er(hfac)_4]$

SMM Er(3+) HEXAFLUOROACETYLACETONATE SODIUM SALT

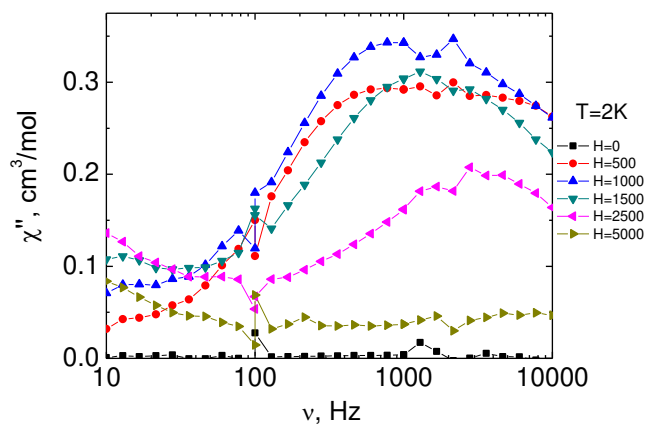
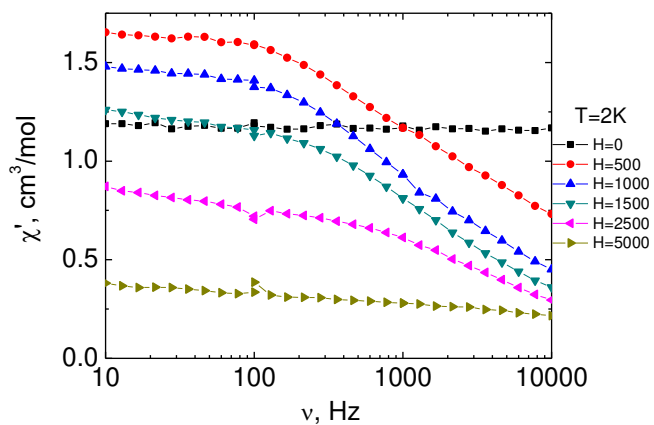


SMM Na[Er(hfac)₄]

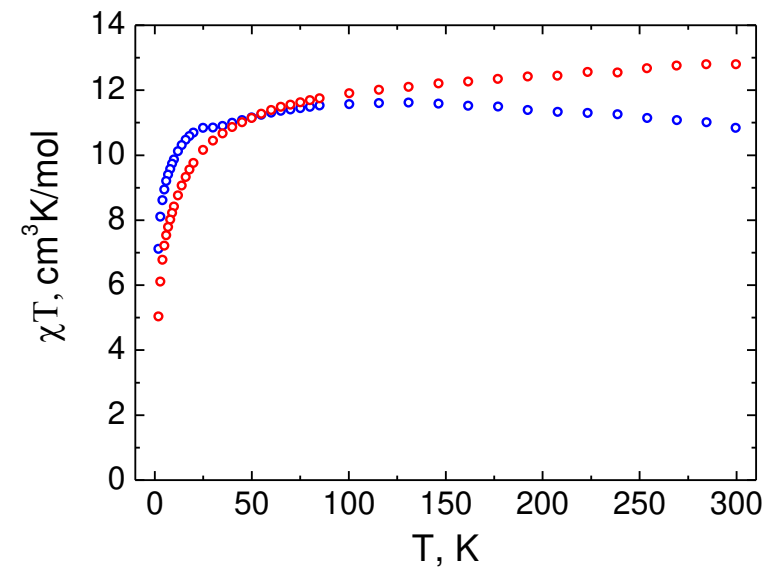
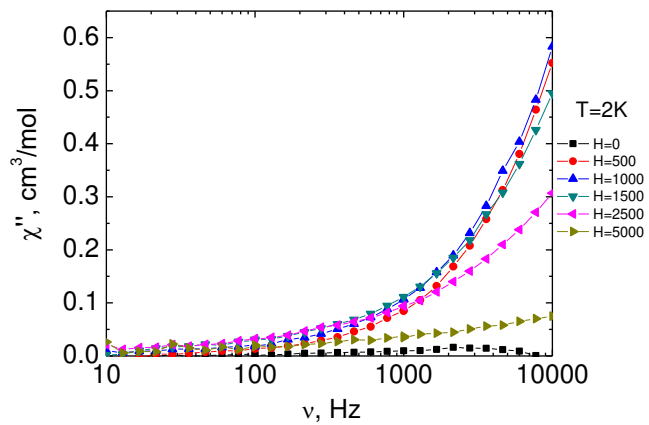
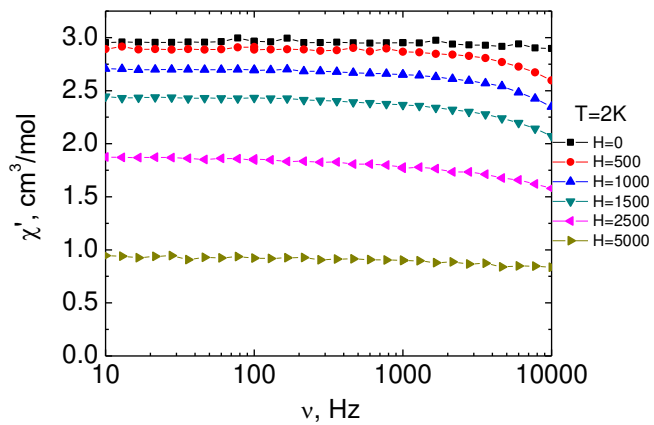


SQUID

$\text{Na}^+[\text{Er}(\text{hfac})_4]$

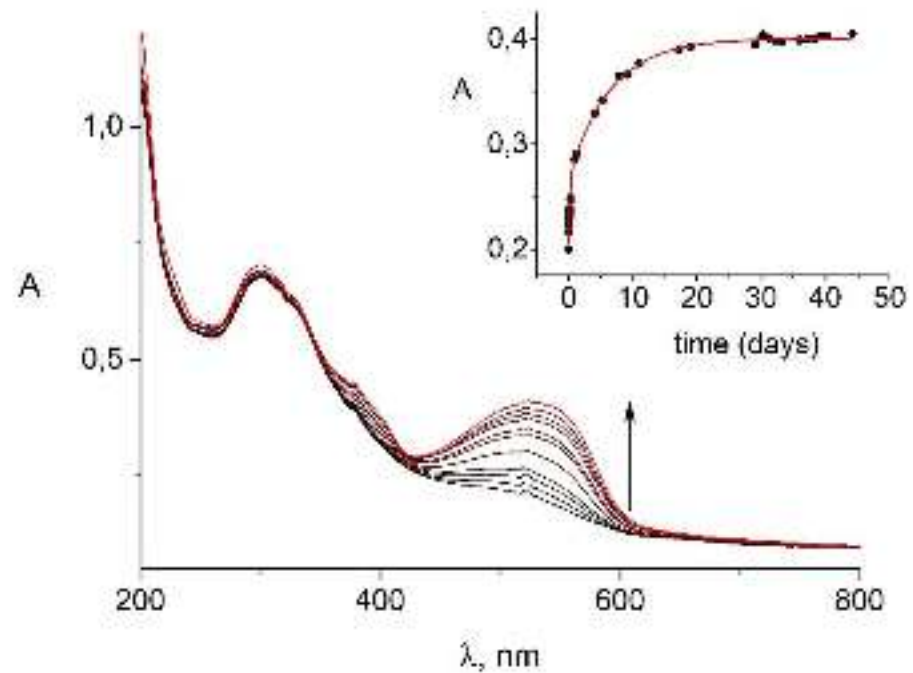


$\text{SP}^+[\text{Er}(\text{hfac})_4]$

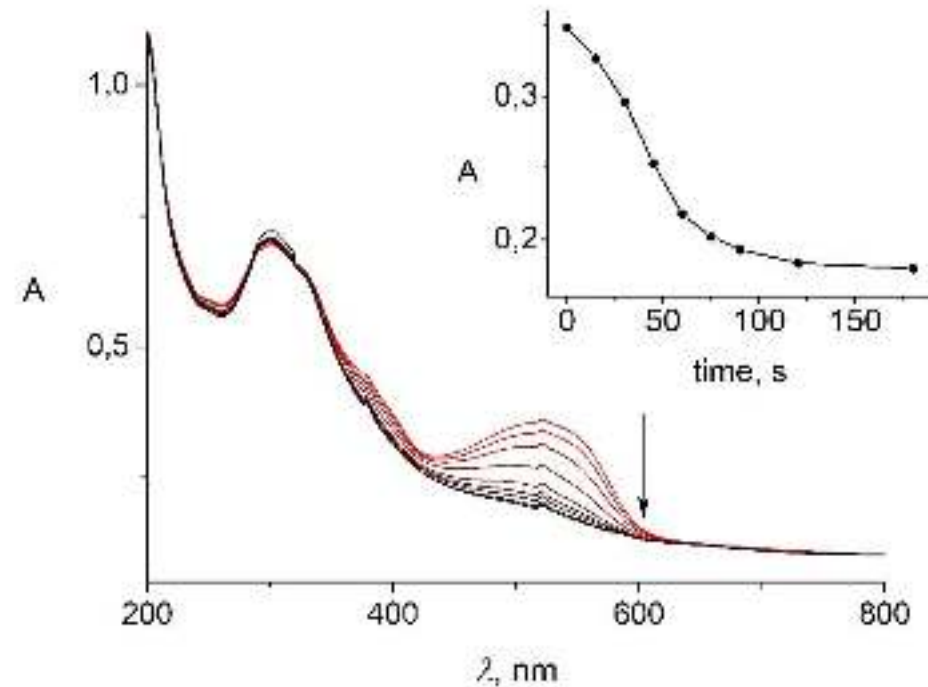


○ $\text{Na}^+[\text{Er}(\text{hfac})_4]$
○ $\text{SP}^+[\text{Er}(\text{hfac})_4]$

PHOTOCHEMISTRY SP^+ [Er(hfac)₄]



Kinetics of increase in the optical density of the open form



The kinetics of the decrease in the optical density of the open form

CONCLUSIONS

1. Complexes of erbium hexafluoroacetylacetonate (3+) with organic cations of the spirocyclic series were synthesized and characterized for the first time. The salt with the spiropyran cation $SP^+[Er(hfac)_4]$ was studied by X-ray diffraction.
2. It has been shown that the salt with the spiropyran cation does not retain the MMM properties inherent in the original sodium salt $Na^+[Er(hfac)_4]$.
3. The photochemistry of the salt with the spiropyran cation $SP^+[Er(hfac)_4]$ in the polycrystalline state was studied. The complex exhibits photochromic properties in the crystalline state, in contrast to the original bromide salt of spiropyran.

ACKNOWLEDGEMENTS

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