

## Interaction of $TbCl_3$ and lanthanide complexes with poly(*N*-vinylpyrrolidone).

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The interaction of  $TbCl_3$  and lanthanide(III)  $\beta$ -diketonate complexes with poly(*N*-vinylpyrrolidone) (PVP) polymer was studied using fluorescence spectroscopy. In the presence of PVP the emission of  $Tb^{3+}$  in ethanolic solution of  $TbCl_3$  significantly increased owing to the excitation energy transfer from PVP to  $Tb^{3+}$  ions, which was more efficient as compared to a direct excitation of the  $Tb^{3+} 4f^75d^1$  levels. In contrast, emission of  $NEt_4Tb(hfa)_4$  and  $NEt_4Eu(hfa)_4$  complexes was almost completely quenched in solution containing PVP. The PVP bound both  $Ln^{3+}$  ions and hfa ligands which caused decomposition of Ln-hfa complexes and switched off the excitation energy transfer from the ligand to the emitting  $Ln^{3+}$  ion. The important role of hydrogen bonds in stabilization of interaction of hfa ligands with PVP was indicated.

$Ln^{3+}$  ions and  $\beta$ -diketonate ligands strongly interact with poly(*N*-vinylpyrrolidone) (PVP) polymer in solution

### Słowa kluczowe

poly(*N*-vinylpyrrolidone), PVP, lanthanide(III),  $TbCl_3$ , emission quenching, rare earths

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