

## The outer-sphere association of p-sulfonatothiacalix[4]arene with some Co(III) complexes: The effect on their redox activity in aqueous solutions

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### Abstract

The effect of the ion-pairing of Co(III) complexes with p-sulfonatothiacalix[4]arene (STCA) on Fe(II)-Co(III) electron transfer rate was evaluated from the analysis and comparison of kinetic data in double Co(III)-Fe(II) and triple Co(III)-Fe(II)-STCA systems at various concentration conditions. Complexes [Co(en)<sub>3</sub>]<sup>3+</sup>(1), [Co(en) 2ox]<sup>+</sup>(2), [Co(dipy)<sub>3</sub>]<sup>3+</sup> (3), [Co(His)<sub>2</sub>]<sup>+</sup>(4) and [Fe(CN)<sub>6</sub>]<sup>4-</sup> were chosen as Co(III) and Fe(II) compounds. The effect of STCA was found to correlate with the association mode. The outer-sphere association with STCA was found to exhibit the insignificant effect on Fe(II)-Co(III) electron transfer  $k_{et}$  constants for complexes 3 and 4 with bulky and rigid chelate rings, while more sufficient inclusion of flexible ethylenediamine rings of 1 and 2 into the cavity of STCA results in the unusual increase of  $k_{et}$ . © 2007 Springer Science+Business Media, Inc.

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### Keywords

Co(III) complex, Inclusion complex, Outer-sphere electron transfer, P-sulfonatothiacalix[4]arene