radiative (k_r) and nonradiative (k_{nr}) are constants for excited-state decay. Values of k_r are nearly constant at ~(1–2) × 10^3 s^{-1} for the samples, whereas k_{nr} values span several orders of magnitude.

Possible quenching mechanisms for the weakly emissive and nonemissive samples include excited-state energy transfer (Cu^{2+}, Eu^{3+}, and $Cr(urea)_6^{3+}$ derivatives), electron transfer (Ag^+ and Cu^{2+} derivatives) and H-atom abstraction ($n\text{-}C_4H_9NH_3^+$ and $n\text{-}C_8H_{17}NH_3^+$ derivatives). Partially Eu-substituted HUP provides evidence for excited-state energy transfer: both the UO_2^{2+}-based emission and pink Eu^{3+} luminescence are simultaneously observed upon excitation of of the UO_2^{2+} chromophore. The relative intensities of the two types of emission vary with the Eu content in both this system and Eu-substituted $Ca_{1/2}UP$ samples. Concentration effects on luminescence have also been investigated with Ag-substituted KUP. The UO_2^{2+}-based emission is partially quenched in samples prepared from solutions in which the Ag:K ratio is as little as ~1:10,000. Some evidence for an exciton mechanism has been obtained in these studies.

Derivatives of HUP based on cationic transition metal complexes such as $Cr(urea)_6^{3+}$ afford interesting comparisons of excited-state properties with solution environments. To illustrate, the Cr complex exhibits fluorescence and phosphorescence at 77 K in an EPA glass. Absorption bands due to this complex are relatively unaffected when the complex is incorporated into the HUP lattice (λ_{max} ~ 625 nm), but no emission is observed from the solid at 77 K. These observations illustrate the role of environment on excited-state processes and the versatility of HUP as a host lattice for evaluating environmental effects.

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The Electronic Structures of Adducts of Lanthanide-(III) Tricyclopentadienides

H.-D. AMBERGER*† and N. M. EDELSTEIN

Materials and Molecular Research Division, Lawrence Berkeley Laboratory, Berkeley, Calif. 94720, U.S.A.

Adducts of the rare earth tricyclopentadienides ($Cp_3Pr \cdot add$) were first described by Birmingham and Wilkinson in 1954. Since then their chemistry and geometrical structures have been extensively studied. Although excellent optical spectra were reported by Pappalardo *et al.* at the end of the sixties, nothing is known about their electronic structures. The main reason for this is that they don't crystallize into single crystals which are suitable for optical measurements. Therefore they can only be studied in solution and the additional information obtained from polarized optical single crystal measurements is missing. In solution comparable information may be obtained by performing magnetic circular dichroism measurements.

By studying the cold and hot MCD transitions, 14 crystal field levels of $Cp_3Pr \cdot CNC_6H_{11}$ could be identified. After fitting this truncated crystal field splitting pattern, 36 bands in the low temperature absorption spectrum could be assigned. By fitting the energies of these 36 levels, a refined set of parameters was obtained. On the basis of this parameter set the low temperature absorption spectra of the adduct $Cp_3Nd \cdot MeTHF$ could also be explained.

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†Permanent address: Institut für Anorganische und Angewandte Chemie der Universität Hamburg, D-2000 Hamburg 13, Martin-Luther-King-Platz 6, F.R.G.

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^{11}B NMR Studies on some Uranium(IV) Poly(pyrazol-1-yl) Borate Complexes

NOÉMIA MARQUES*, A. PIRES DE MATOS

Department of Chemistry, Institute of Energy, LNETI 2865, Sacavém, Portugal

and K. W. BAGNALL

Department of Chemistry, The University of Manchester, Manchester M13 9PL, U.K.

Although no full X-ray structural data are available yet for the actinide complexes of the poly(pyrazol-1-yl)borates, a good deal of information has been obtained from their electronic and ^1H NMR spectra.

In this work results from ^{11}B NMR spectroscopy will be presented and a correlation with the above data is attempted. The compounds studied were of the type $UCl_x[H_nBL_{4-n}]_{4-x}$ where L = pyrazole or 3,5-dimethylpyrazole.

In spite of the broad lines observed in these compounds, the spectra are simple, and in some cases the large chemical shifts of some paramagnetic species seem to be quite helpful.

The spectra of the compounds $UCl_2[HB(3,5Me_2Pz)_3]_2$ and $UCl_2[H_2B(3,5Me_2Pz)_2]_2$ in tetrahydrofuran display two lines, one with a small isotropic shift and another with a large isotropic shift. Titra-