THERMOGRAVIMETRIC EVALUATION OF THE DECOMPOSITION KINETICS OF CHROMIUM POLYACRYLATE COMPLEXES

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Polymeric metal chelates, moreover, are of great significance in different fields of chemistry, e.g. catalytic reactions, mining separations, biochemistry, medicine, environmental chemistry, etc1,2,3,4,5. The first investigations on the metal complexes of (PAA) have been done many years ago. Gregor et al.6 have extended the method of Bjerrum7 for the determination of the stability constant to polymer-metal complexes. In the following years, other polyelectrolyte-metal complexes were studied including polymers undergoing conformational changes. Particular interest has been focused on the complexes of first raw transition-metal ions toward the determination of stability constants, structural features, and thermal properties13,14. The development of these materials requires a precise knowledge of their thermal behaviours. Here we report the effects of chromium aging on the thermal decomposition of chromium polyacrylates prepared by our.

Thermogravimetric studies of poly(acrylic acid) (PAA) and its chromium polyacrylate complexes were made. Six methods were used to investigate the thermal decomposition of these materials. These investigated methods are those of Coats-Redfern (CR), Horowitz-Metzger (HM), MacCallum-Tanner (MC), van Krevelen (vK) and Madhusudanan-Krishnan-Ninan (MKN) and Criado. The value of the activation energies obtained using so-called method was in agreement with together. Also the experimental data were compared to master curves. Analysis of the experimental results suggested that the actual reaction mechanisms of PAA and metal-polymer complexes were a $D_n$ deceleration type.

References

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