

# Macromolecular Metal Carboxylates and Their Nanocomposites

Bearbeitet von  
Anatolii D. Pomogailo, Gulzhian I. Dzhardimalieva, V. N. Kestelman

1st Edition. 2010. Buch. x, 306 S. Hardcover

ISBN 978 3 642 10573 9

Format (B x L): 15,5 x 23,5 cm

Gewicht: 695 g

[Weitere Fachgebiete > Technik > Werkstoffkunde, Mechanische Technologie > Materialwissenschaft: Keramische Werkstoffe, Glas, Sonstige Werkstoffe](#)

schnell und portofrei erhältlich bei

  
DIE FACHBUCHHANDLUNG

Die Online-Fachbuchhandlung [beck-shop.de](http://beck-shop.de) ist spezialisiert auf Fachbücher, insbesondere Recht, Steuern und Wirtschaft. Im Sortiment finden Sie alle Medien (Bücher, Zeitschriften, CDs, eBooks, etc.) aller Verlage. Ergänzt wird das Programm durch Services wie Neuerscheinungsdienst oder Zusammenstellungen von Büchern zu Sonderpreisen. Der Shop führt mehr als 8 Millionen Produkte.

# Preface

This book is devoted to the single functional group, metal derivatives of unsaturated carboxyl ion  $\text{RCOO}^-$ , where R is a radical with multiple bonds. This field embraces a huge number of chemical compounds, among which are new types of monomers and polymers with interesting structures and properties and unusual chemical transformations. This field includes both natural and artificial polymers but mainly various synthetic materials.

Macromolecular metal carboxylates are currently the object of extensive studies due to their unique catalytic, magnetic, optical, and other properties as well as perspective precursors of novel nanocomposite functional materials. These complexes and nanocomposites have attracted scientific interest both from a fundamental point of view and their potential applications. Reactivity of unsaturated metal carboxylates containing metal atoms in immediate proximity to a polymerizable bond is closely related to their molecular structure. It is of essence to reveal the peculiarities of their behavior, which is determined by the metal on the one side and the polymeric backbone on the other.

In this book, the main representatives of unsaturated carboxylic and corresponding polymeric acids as well as the methods of synthesis of metal carboxylates are analyzed. There are no analogs of such monographs devoted to various aspects of synthesis, polymerization, and properties of the monomeric and macromolecular metal carboxylates and nanocomposites in the literature.

Structure of monomer and macromolecular metal carboxylates, the type of coordination of carboxylate ion, the electronic and valence state of metal, and specificity of metal–organic ligand bond were also considered. We want to note the role of kinetic and stereochemical effects on the main stages of polymerization and copolymerization of such metal-containing monomers. Knowledge of these peculiarities allows one to effectively control the structure and properties of metallopolymers.

An alternative way to produce of macromolecular metal carboxylates by the interaction of polymeric acids with metal compounds is also discussed. In this book, the features of complexation of carboxylic macromolecular ligands, the effects of a polymer chain, the constants of formation and stability of macrocomplexes formed are considered.

Special chapters of the book are devoted to applications of metallopolymer and nanocomposites as well as polymer-assisted synthesis of metal nanoparticles.

We think that this book is the first comprehensive analysis of this field of science. We tried to consider the problem as exhaustively as possible, and we hope that missed questions are not principal.

Who is our potential reader? Chemistry of carboxylates, as any interdisciplinary field of science and technique, rapidly develops, and intensive accumulation of experimental data in this field embarrasses not only beginners but also experienced researchers working in this field. First of all, this book can be useful for a wide range of scientists and engineers of research institutes and industry. Then, it can serve as a handbook for students, postgraduate students of universities and colleges that are interested in this field of science. After 25 years of our own researches in this field and analysis of literature, we believe in the necessity of appearance of this book generalizing accumulated data on all aspects of monomeric and polymeric metal carboxylates.

Section 9.2.1 was written together with Professor Aleksander S. Rosenberg who to our great regret deceased untimely.

Chernogolovka, Russian Federation

King of Prussia, PA  
May 2010

Anatolii D. Pomogailo and  
Gulzhian I. Dzhardimalieva  
Vladimir N. Kestelman