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OBTAINING AND PRACTICAL USE OF MODIFIED THIOGOL OLGAMERS

Zoirova Husnora Sakhomiddin kizi
Master's student at Termez State University
Normurodov Bakhtiyor Abdullayevich
Professor of Termez State University
Husniddinova Ominakhan Khairulla kizi
Student of Tashkent State Technical University

Abstract: Synthesis and practical application of modified thiogol olgamers are of great importance in many fields such as chemistry, materials science, electronics and medicine. By changing their various physical and chemical properties, it is possible to create new materials, technologies and production processes. Such algorithms provide innovative solutions in many industries and create new opportunities for us.

Key words*:* Modified thiogol algorithms, synthetic, material science, electronics, technology, innovative solution.

Modified thiogol polymers are polymers modified mainly with thiol groups (-SH) and other chemical groups. They are distinguished by their high reactivity and changed physical and chemical properties. Thiogol oligomers are usually obtained by polymerization reactions or cross-linking methods in the field of organic chemistry. They are used in various industries, in particular, in materials science, medicine, electronics and chemical industry.

The initial discovery of Thiogol olgamers and related scientific developments generally took place in the late 19th and early 20th centuries. The main discoveries and researches were as follows:

Thiol groups (–SH) were first discovered by Karl Wilhelm Scheele in 1777. These groups became important in the study and synthesis of organic compounds. They play a key role in the production of many organic and polymer products.

The study of thiogol compounds and their polymerization also began in the 19th century. In the 1900s, polymers played an important role in the study and modification of polymers. Initially, these algamers were sulphide compounds containing thiol groups, which were used in many industrial processes.

Modified thiogol olgamers with their wide capabilities were further developed with new technologies that appeared in science and industry in the middle of the 20th century.

These polymers are mainly modified by polymerization, cross-linking and redox reactions.

In the 1950s and 1960s, new methods and technologies were developed in polymer synthesis. During this period, thiogol polymers began to be used in the polymer industry, materials science, and elastomers.

In the 1980s and 1990s, they began to be developed as bioactive materials and biomaterials. During this period, their use was expanding, especially in medicine and the electronics industry.

Thiogol olgamers, especially in medicine, are used as implants, drug delivery systems and bioactive materials due to their biocompatibility.

Elasticity: Modified thiogol polymers are used in elastomers because they have high elastic and mechanical properties.

Thiol oligomers are synthesized through polymerization reactions with thiol groups. These processes may include:

Radical polymerization: Thiol groups can participate in radical polymerization reactions due to their high reactivity. In this process, during the polymerization of thiol oligomers, radicals are interconnected and long chains are formed.

$$R\text{-}SH \rightarrow R\text{-}SH + \ldots \rightarrow Polymer$$

The structure of modified thiol oligomers can be changed through cross-linking processes between thiol groups. Cross-linking reactions help to improve the mechanical and chemical properties of polymers.

Disulfide bonds are formed between thiol groups through oxidation processes. This reaction usually takes place in the presence of oxidizing agents or oxygen.

$$2R-SH \rightarrow R-S-S-R \; 2R\text{-}SH \quad R\text{-}S\text{-}S\text{-}R2R-SHR-S-S-R$$

Disulfide bonds help strengthen the structure of polymers and improve their mechanical properties.

Thiol groups enter into a condensation reaction with aldehyde or ketone groups, and new modified thiol oligomers are formed.

$$R-SH+R'-C=O \rightarrow R\text{-}SH+R'\text{-}C=O$$

Thiol groups participate in redox reactions to convert their -SH group into -S-S bonds. These reactions are used to control the reactivity of thiol groups and to create new materials.

$$2R-SH \rightarrow R-S-S-R2R\text{-}SH$$
$$R\text{-}S\text{-}S\text{-}R2R-SH \; R-S-S-R$$

These redox reactions improve the mechanical and chemical properties of thiol oligomers.

Thiogol olgamers are used in the production of high-polymeric materials, especially in the creation of elastomers and high-strength materials. They are used to create new polymeric materials using bridging reactions.

Thiogol olgamers are used for drug delivery systems, i.e. nanocapsules and other pharmaceutical preparations, due to their biocompatibility and reactivity properties.

Thiogol oligomers bind to proteins or other biomolecules and are used in biotechnological applications, for example, in the creation of biosensors. They can also be used in in vitro diagnostics.

Thiogol oligomers are used as auxiliary reagents in chemical reactions due to their reactive and catalytic properties. They are used in the development of catalysts for microapplications, that is, in organic synthesis.

Thiogol polymers are used in nano-technology and electronic components. They are used in the production of new materials, for example, as modified electrodes or supercapacitors.

CONCLUSION

Modified thiogol olgamers are widely used in various fields such as chemistry, biotechnology, electronics, pharmaceuticals and materials science. Through their acquisition and modification, new functional materials and technologies are created, which is of great importance in the development of science and industry.

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