During the last two decades the chemistry of macromolecular organosilicon compounds has established itself as a feature of the utmost importance in the present and future development of organosilicon chemistry. For its further successful development it is essential to systematize the material that has already accumulated and to work out a scheme of nomenclature and classification of macromolecular organosilicon compounds. The development of a nomenclature and classification for this important section of organosilicon chemistry will facilitate its study and further progress. The names of macromolecular organosilicon compounds are at present formed without any definite system, and they are very often arbitrary and do not reflect the chemical structure of the macromolecular organosilicon compound; it is therefore impossible to get any idea from these names of the properties and possible chemical reactions of the substances. No schemes of nomenclature and classification of macromolecular organosilicon compounds have yet been proposed in the literature.

In one of our papers we have stated the basic principles of our proposed nomenclature and classification of low-molecular-weight organosilicon compounds [1]. It is proposed that our rational nomenclature for macromolecular organosilicon compounds should be based on the structure of the main chain of the macromolecule. The names of macromolecular organosilicon compounds are made up of: numbers and names of end groups; names of groups, radicals, or atoms bound to silicon or other atoms forming links in the chain molecule, with indications of their numbers; names of groups, radicals, or atoms from which the chain of the macromolecule is built up. The number of links in the chain is denoted by the prefix "poly". For end groups an indication is given for their position at the first and terminal atom, namely (1−n). The names of copolymers are built up in a similar way. The silicon atom is called "silane".

Our classification of macromolecular organosilicon compounds is based on the structure of the main chain of the molecule. As a starting point for the classification we take the sila hydrocarbon $H_2Si-[SiH_2]_x-SiH_2$ and all other macromolecular organosilicon compounds are regarded as derivatives of this substance, i.e., as substances formed from it by replacement of hydrogen atoms by organic radicals or groups and, for certain classes of compounds, by simultaneous replacement of Si−Si links by bivalent radicals, oxygen, or amino group (−NH₂), etc.

When in a polymeric sila hydrocarbon hydrogen is replaced by radicals or groups, for example:

<table>
<thead>
<tr>
<th>Radicals</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl CH₃⁻</td>
<td>Chloromethyl ClCH₂⁻</td>
</tr>
<tr>
<td>Ethyl C₂H₅⁻</td>
<td>Chloroethyl ClCH₂CH₂⁻</td>
</tr>
<tr>
<td>Propyl C₃H₇⁻</td>
<td>Chlorophenyl ClC₆H₄⁻</td>
</tr>
<tr>
<td>Butil C₄H₉⁻</td>
<td>Vinyl CH₂=CH⁻</td>
</tr>
<tr>
<td>Phenyl C₆H₅⁻</td>
<td>Ethynyl CH≡C⁻ etc.</td>
</tr>
</tbody>
</table>

with simultaneous replacement of Si−Si bonds by bivalent radicals (−R−) or bivalent groups (−NH₂, −OM⁺, where M is a metal), or by oxygen atoms, various classes of macromolecular organosilicon compounds are accordingly formed.

The following division into classes is the one that accords most satisfactorily with the present position of the study of macromolecular organosilicon compounds.

1. Silanochain polymers or alkyl(aryl)polysilanes. Silanochain polymers are substances in which the molecular chain is composed entirely of silicon atoms. Substances of this class are formed by replacement of hydrogens in the polymeric sila hydrocarbon $H_2Si-[SiH_2]_x-SiH_2$ by organic radicals or groups. Their names are built up from the numbers and names of end groups, the names of radicals or groups (the number that occur in the unit of the chain molecule is indicated), the names of atoms from which the main chain of the polymer molecule is built, and the prefix "poly", for example:
Compounds of this class are obtained by the action of alkali metals on alkyl(aryl)halosilanes, and also by other methods. The silicon chain is destroyed by hydrolysis, especially in an alkaline medium. On pyrolysis, silanochain polymers decompose with formation of low-molecular-weight products, readily oxidized by air.

2. **Carbosilanochain polymers or organopolyalkyl(aryl)silanes.** Carbosilanochain polymers are substances in which the molecular chain is composed of carbon and silicon atoms. Compounds of this class are formed by replacement of hydrogens in the polymeric sila hydrocarbon $H_2Si-[SiH_2-]_x-SiH_2$ by radicals or groups, with simultaneous replacement of $Si-Si$ links by bivalent alkyl or aryl radicals. Their names are built up from the numbers and names of end groups, the prefix "poly", names and numbers of radicals or groups of the unit of the chain molecule, and names of radicals and atoms from which the chain of the macromolecule is built, for example:

$$(CH_3)_3Si-[Si(CH_2)_xSi(CH_3)_3]_xSi(CH_3)_3$$

(1–n) Hexamethylpolydimethylsiloxane

$$(CH_2)_3Si-[Si(CH_2)_xSi(Ph)_x]_xSi(Ph)_3$$

(1–n) Hexamethylpolysilphenylsiline

$$(SiC_6H_5CH_3)_x$$

Polyphenylsiline

Compounds of this class are prepared by the action of alkali metals, etc., on alkyl(aryl)halosilanes and dihalo derivatives. The silicon-carbon polymer chain is not broken down hydrolytically by water. On pyrolysis, carbosilanochain polymers very often form low-molecular-weight polymeric compounds having chains of similar structure.

3. **Oxygenvsilanochain polymers or organopolyalkyl(aryl)siloxanes.** Organopolyalkyl(aryl)siloxanes are substances in which the molecular chain is composed of oxygen and silicon atoms. Compounds of this class are formed by replacement of hydrogens in the polymeric sila hydrocarbon $H_2Si-[SiH_2-]_x-SiH_2$ by radicals or groups, with simultaneous replacement of $Si-Si$ links by oxygen. Their names are built up from the numbers and names of end groups, the prefix "poly", names and numbers of radicals and groups attached to silicon in the unit of the chain, and names of radicals and atoms from which the chain of the macromolecule is built:

$$(CH_3)_3Si-[OSi(CH_2)_xOSi(CH_3)_3]_xSi(CH_3)_3$$

(1–n) Hexamethyloxydimethylsiloxane

$$(CH_2)Si-[OSi(CH_2)_xOSi(OCH_2)_3]_xSi(OCH_2)_3$$

(1–n) Hexamethoxydimethylsiloxane

$$(C_2H_5)_3O-[OSi(C_2H_5)_xOSi(OCH_2)_3]_xSi(OCH_2)_3$$

(1–n) Hexaethoxypolydimethylsiloxane

$$(Si(OCH_2)CH_2O)x$$

Polyethoxysiloxane

$$(C_2H_5)O-[OSi(OCH_2)CH_2O_xOSi(OCH_2)_3]_xSi(OCH_2)_3$$

(1–n) Hexaethoxypolydimethylsiloxane

$$(Si(OCH_2)CH_2O)x$$

Polyethoxysiloxane

Compounds of this class are obtained by hydrolysis with water of organochalosilanes, organo-substituted esters of silicic acid, and other compounds containing groups attached to silicon that may be split off by hydrolysis; they