

New 'fork'-structure polymers – as immobilizing agent

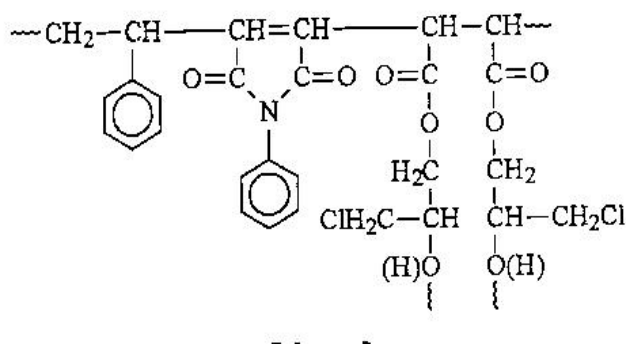
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High-molecular compounds possess the precious ability to adsorb other compounds on their surface. An interesting and important phenomenon has been discovered last time: adsorbed molecules change their physical and chemical properties under the influence of polymer. The degree of these changes depends on the distance between polymer and adsorbed molecule: the smaller the distance is, the greater is the effect. Stronger effects appear in microstructures in which adsorbed low-molecules are more rimmed through structural elements of the high-molecular compound. A typical chain-branched, grafted structures have been applied here. The most pronounced properties of this type are observed in comb structures.

A new, so-called "fork" structures of polymers, that have been worked out by the author [1], can be very useful. The main advantage of such a structure is the vicinal position between side-chains. Thanks to close relations to side-chains their sorption of other compounds occurs in a different and specific manner. This can be visible in the sorption of solvents, under the solubility of polymers of that kind. Such solutions reveal non-typical rheological properties. The influence on reactivity of adsorbed compounds is also present here. Thus they offer real possibilities to obtain new immobilizates having specific therapeutic properties. An example of such polymer having the new fork structure is presented below:



As results from the scheme, - many possibilities to control and regulation the sorption-activity of such a structure exist by : 1) changing the composition, 2) structure and polarity of the main-, and especially side- chains. Several parameters of the biological activity of the polymers skeleton have to be regarded when tailoring such structures for therapeutic purposes: (1) degree and the direction of the activity, (2) inductive influence on immobilizing relationships, (3) the harmlessness, the inhibition of by-processes, as e.g. allergic processes, and the ability of excretion from the organism.

[1] R.T. Sikorski, "New-structure polymers- new grafted polymers." *Polymery*, **44**, 623 (1999)