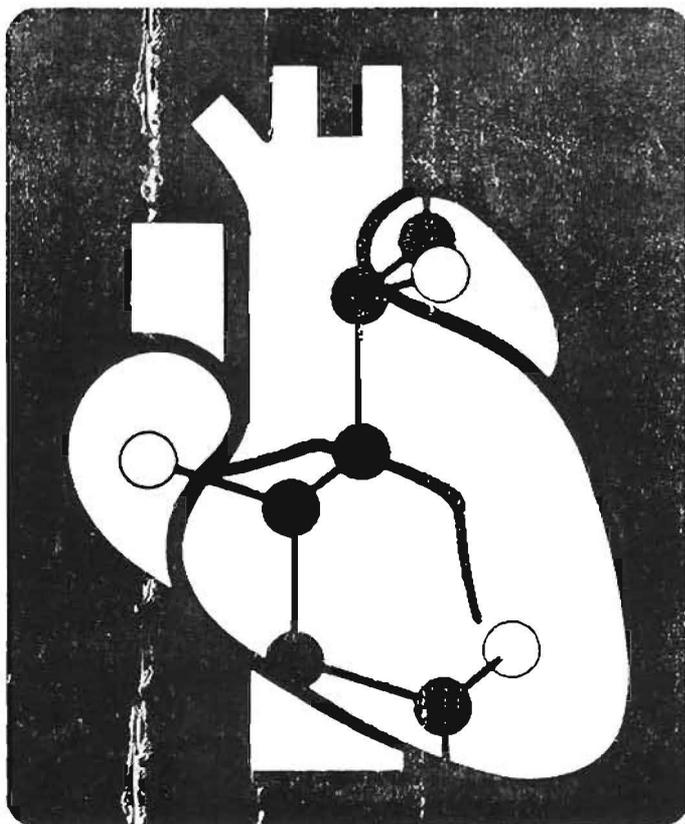


2nd INTERNATIONAL CONFERENCE
ON
POLYMERS IN MEDICINE
BIOMEDICAL AND PHARMACEUTICAL APPLICATIONS
3-7 JUNE 1985, CAPRI, ITALY.

Sponsored by
EUROPEAN SOCIETY FOR BIOMATERIALS
SOCIETY FOR PLASTICS ENGINEERS

ABSTRACTS



NEW BIOLIZED THERMOPLASTIC ELASTOMERS FOR BIOMEDICAL
APPLICATIONS

P.GIUSTI¹, M.PALLA², G.SOLDANI²

¹ Dipartimento di Ingegneria Chimica - Via Diotisalvi, 2
56100 - PISA.

² Centro Studi Processi Ionici di Polimerizzazione e
Proprietà Polimeri - Facoltà di Ingegneria - Via Diotisalvi, 2 - 56100 PISA - Italy.

Thermoplastic elastomers are certainly the most promising elastomeric materials for cardiovascular applications, since they possess fairly good mechanical properties without the need for vulcanization.

We have already studied the synthesis and the characterization of new thermoplastic elastomers (mainly polyurethanes) with mechanical properties easily modifiable over a wide range by varying the ratio of the hard and soft segments⁽¹⁾.

Although their hemocompatibility is fairly good as evaluated from in vitro tests, long term in vivo experiments of small diameter porous vascular grafts manufactured with these materials were not completely satisfactory.

In order to improve the performance of the grafts we studied the properties of new biomaterials obtained by the interaction of polyurethanes produced in our laboratories, and fibrin which is cross-linked "in situ" while the prosthesis is manufactured.

The presence of fibrin should increase the blood compatibility of the prosthesis and, during its biodegradation should favour the tissue ingrowth and neointima formation as it has been shown in the use of fibrin glue for sealing vascular prostheses of high porosity⁽²⁾.

Physico-chemical and mechanical properties of these new biomaterials are presented as well as their hemocompatibility.

1. P.Giusti, R.Pietrabissa, G.Soldani, P.Miccoli, P.Iacconi, New thermoplastic elastomers for small diameter vascular grafts, 4th Congress of ISAO Kyoto (1983) to be published in Artificial Organs.
2. A.Haverich, G.Welterbusch, H.G.Borst, The use of fibrin glue for sealing vascular prostheses of high porosity, Thorac. Cardiovasc. Surgeon 29, 252-254 (1981).