

A PROCESS FOR SYNTHESIS OF POLYCARBOSILANE

The scientific and technological developments with the objective of betterment and safety of human life require several classes of materials ranging from materials that are highly temperature and environment sensitive to the materials that are exceptionally stable under extreme environments. The most stable materials under extreme temperature and oxidative environments are undoubtedly ceramics. Ceramics can be broadly divided into oxide ceramics and non-oxide ceramics. Contrary to non-oxide ceramics most of the oxide ceramics tend to lose mechanical strength beyond 1000 degree centigrade. For structural applications beyond 1000 degree centigrade under oxidative environments like, gas turbine engines, rockets, missiles and nuclear reactors, silicon carbide ceramic based components are highly preferred. This is due to exceptionally high thermal stability, corrosion and erosion resistance, low thermal expansion coefficient and very good thermo-oxidative stability of silicon carbide. Conventional route for processing of SiC components is powder processing but it has limitation in making complicated and fine dimension products like fibers, films and coatings. An alternative route that enables processing of complicated products at relatively lower temperatures is polymer precursor derived ceramic technology.

Among various polymeric precursors of SiC, polycarbosilane is most explored one. DMSRDE had developed process for synthesis of polycarbosilane to fulfil the requirement of suitable precursor polymer for SiC based products like, fibers, foams and composites. Synthesis process involves thermal backbone rearrangement of polydimethylsilane up to 450 degree centigrade under strict inert atmosphere. Process for synthesis of polycarbosilane has been established using glass reaction set up as well as metallic reactor.

Interested Industries are requested to forward their Expression of Interest (EoI) (with attachments of supporting documents) to Director DMSRDE, Kanpur with a copy to Director DIITM, DRDO HQ (without attachment) on following address:-

To,

Director

Defence Materials and Stores Research & Development Establishment (DMSRDE)

DRDO, Ministry of Defence, Government of India

PO DMSRDE, GT Road,

Kanpur-208013

Phone : (0512) 2451759-78

Fax : 0512-2450404/ 2404774

E-mail ID : [director\[dot\]dmsrde\[at\]gov\[dot\]in](mailto:director[dmsrde@gov.in])

Copy to

Director

Directorate of Industry Interface & technology Management (DIITM)

Room No. 447, DRDO Bhawan, DRDO HQrs, Rajaji Marg, New Delhi-110011

Phone: 011-23013209/23015291

Fax: 011-23793008

Email: **diitm[dot]hqr[at]gov[dot]in**

Industries are requested to enclose supporting document with EoI as per Appendix 'D' of DRDO Policy and Procedure for ToT available at <https://www.drdo.gov.in/sites/default/files/inline-files/drdo%20Policy%20%26%20Procedure%20%20for%20ToT.pdf> and forward it to DMSRDE, Kanpur.