The preparation and characterization of high performance poly(imide-silica) hybrid

권진욱, 박미희, 이승민, 이춘근, 한학수*
연세대학교
(hshan@yonsei.ac.kr*)

Two types of the poly (amic acid) were prepared from the polycondensation with 3,3',4,4'-benzophenonetetracarboxylicdianhydride (BTDA), 4'',4''' -(Hexafluoroisopropylidene)bis(4-phenoxyaniline) (4'',4''' -HF BAPP) and 3-aminopropyltrimethoxysilane (APTMS). One was pure poly(amic acid) and the other was silane end-capped poly(amic acid). In this study, Tetraethyl Orthosilicate (TEOS) was used for generating inorganic polymer with the structure of Si-O-Si bond and was reacted with silane end-capped poly(amic acid) for organic-inorganic hybridization via the sol-gel process by adding some pure H2O. For the analysis, they were analysed by FT-IR, TGA, prism coupler, Dielectric constant analyzer and water sorption Cahn valance. Each of the dielectric constant values which were calculated by Maxwell equation and measured by Dielectric constant analyzer decreased from 2.694 to 2.4561 and from 2.79 to 2.51 with increasing the inorganic precursor, TEOS. The 5% and 10% decomposition temperature range of hybrids were 490.