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Photo definable low D_k , D_f polyimide

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For an establishment of high-speed, large-capacity, many-accessible with short delay communication network, 5G technical format is eager to use higher frequency to have wide frequency band width. In addition, millimeter radar which is indispensable tool for the collision avoidance of the car, will use 60 to 70GHz band. In this work, we studied the effect of polyimide structure on D_f and to develop low D_f polyimides. To understand the effect of polyimide molecular on D_f dynamic mechanical measurement (DMA) technique was used by different frequency measurements during -150 to 100 degree Celsius. As frequency temperature converting law, we can estimate the wide range frequency molecular relaxation data by those DMA data. From the frequency dependency, low temperature molecular relaxation might affect the high frequency D_f value. From those observation,

we designed novel polyimide 2.9 of D_k and 0.001 of D_f at 20GHz by decreasing molecular motion at low temperature region. Then photosensitive polyimide having D_k 3.0 and D_f 0.004 at 20GHz was obtained.

Speaker Biography

Masao Tomikawa now is research fellow of Toray Industries Inc., Member of The Chemical Society Japan, The Society of Polymer Science Japan, The Society of Fiber Science and Technology Japan, American Chemical Society, IEEE. He obtained his BS and MS. in agriculture at The University Tokyo, Engineering Doctor's degree (Ph.D.) at Tokyo Institute Technology and awarded from The Chemical Society Japan (2007) and The Society of Polymer Science Japan (1991), and Japan Institute of Invention and Innovation for unique Patent. He has many papers and patents. He is a specialist of photo sensitive polyimide chemistry.

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