

# Non-quasistatic Measurement of DNTT (dinaphtho[2,3-b:2',3'-f]thieno[3,2-b]thiophene) Thin Film Transistors on the Flexible Substrate

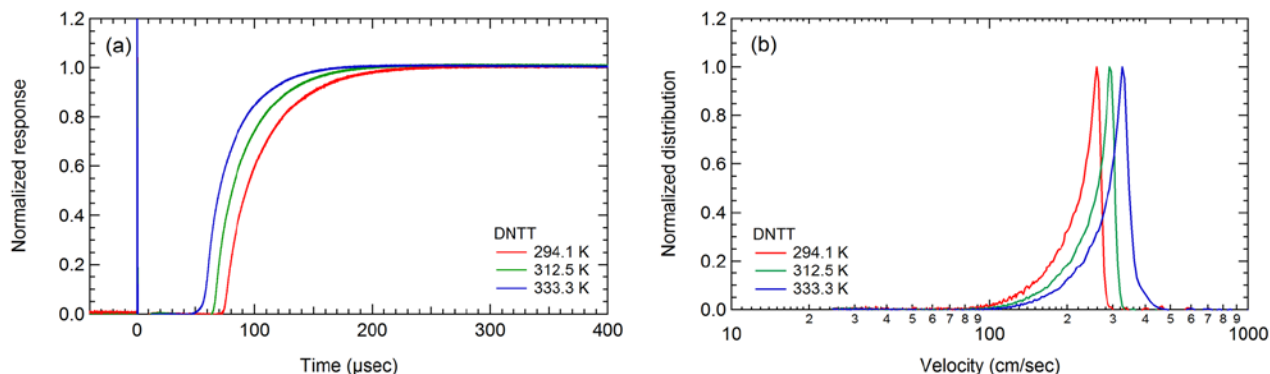
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A lot of works have been made in order to understand the structural and electrical properties of organic thin film transistors (OTFTs) [1,2]. Within various organic materials, DNTT (dinaphtho[2,3-b:2',3'-f]thieno[3,2-b]thiophene) has been one of promising candidate organic material since its first synthesis by T. Yamamoto *et al.*[3] due to good air stability and outstanding electrical characteristics [4,5]. Here, we investigated charge transport properties of DNTT TFTs by using non-quasistatic measurement. We fabricated DNTT TFTs on polyimide substrate and performed time domain measurement by applying pulse voltage to the source electrode, while keeping the RC-time constant of the measurement circuit small. Using our specialized time domain measurement, we extracted dynamic mobility ( $\mu_{dynamic}$ ) and the velocity distributions as a function of measurement temperature. Both dynamic mobility ( $\mu_{dynamic}$ ) and velocity increased as temperature increased which indicate thermally activated transport is dominant in DNTT-TFTs. Such results are in good agreement with other organic TFTs in partially ordered systems.



**Fig. 1. (a) The normalized transient response (b) the normalized velocity distribution as a function of temperature**

## References

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