

All-photopatterned and Fully Stretchable Ion Gel-gated Transistor Array for Skin-like Electronics

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Intrinsically stretchable materials have gained much interest due to their outstanding stretchability and deformability to be applied in skin-like electronics. However, to realize skin-like electronics, the stretchable transistor array is required but it is hard to achieve not only high integration but also electrical performance. To overcome these issues, herein, we demonstrate a facile method for fabricating ion-gel gated transistor array with azide-based photo-crosslinkers. We could gain high integration through photolithography because crosslinkers have azide-functional groups to behave alkyl-insertion reaction by UV. Also, due to electric double layer effect of ion-gel as insulating layer, the transistors could operate in low voltage conditions ( $V_G < -2$ ). Moreover, the device achieved high average mobility of up to  $9.5 (\pm 0.74) \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$  and high on/off ratio ( $> 10^6$ ). We believe that our approach will provide a guidance for next-generation stretchable electronics.