

Supporting Information

High-Density Patterned Array Bonding Through Void-Free Divinyl Siloxane Bis-Benzocyclobutene Bonding Process

Nam Woon Kim¹, Hyeonjeong Choe², Muhammad Ali Shah¹, Duck-Gyu Lee^{1,*} and Shin Hur^{1,3,*}

¹ Department of Nature-Inspired System and Application, Korea Institute of Machinery and Materials, Daejeon 34103, Republic of Korea

² Department of Drug Discovery, Korea Research Institute of Chemical Technology, Daejeon 34114, Republic of Korea

³ Department of Nano-Mechatronics, University of Science and Technology, Daejeon 34113, Republic of Korea

* Corresponding author. E-mail: educk9@kimm.re.kr, shur@kimm.re.kr

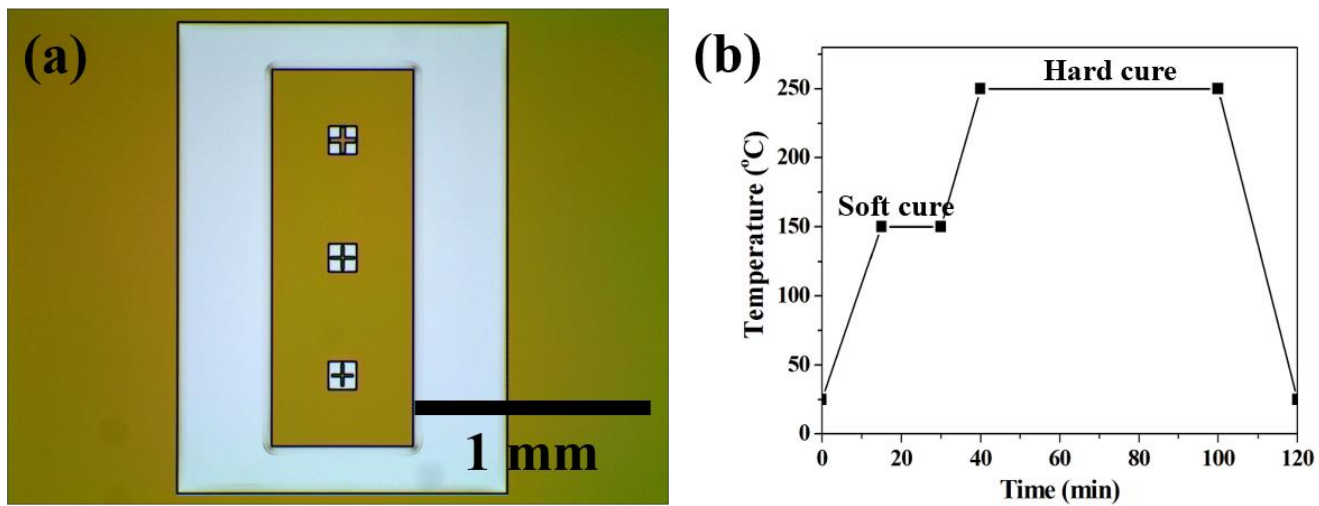


Figure S1. (a) DVS-BCB pattern alignment key and (b) temperature curing process for DVS-BCB bonding.

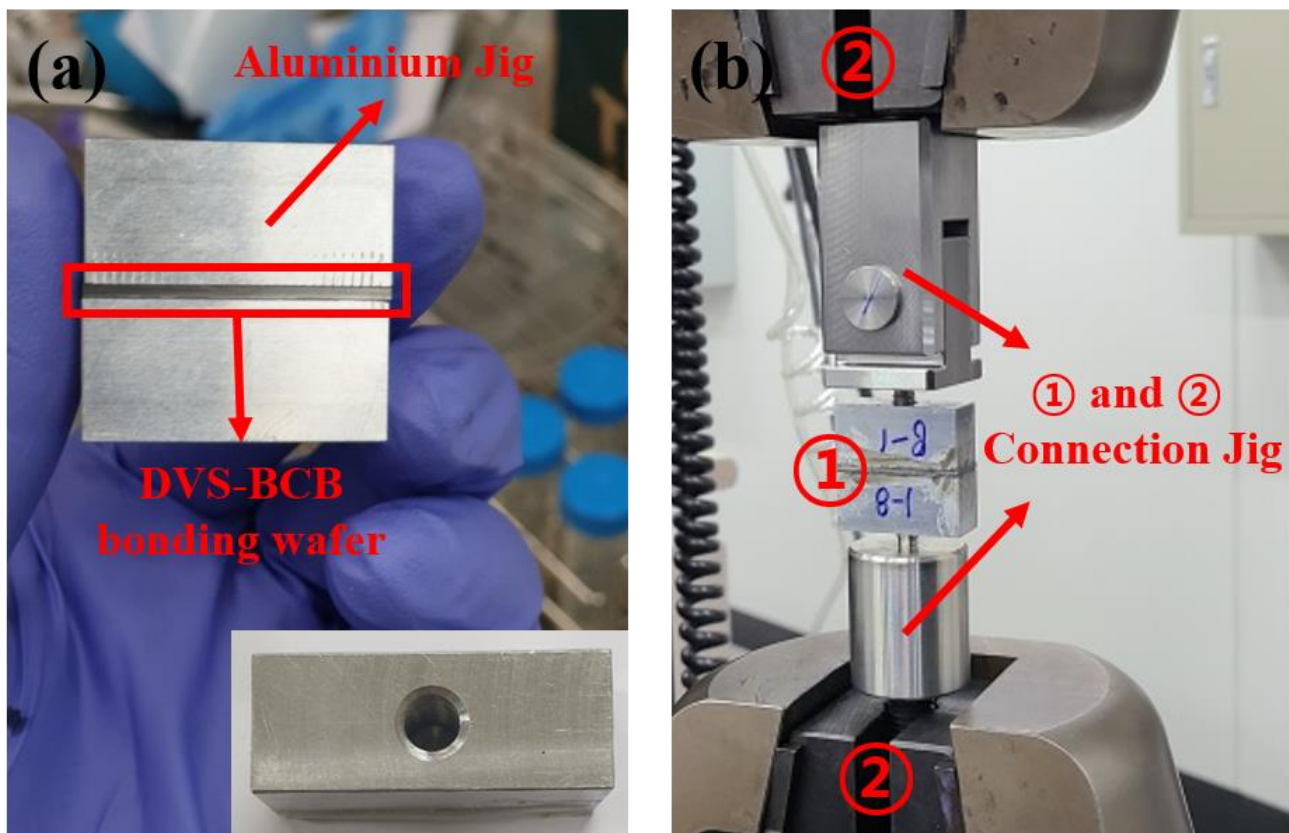


Figure S2. Experimental setup for the measurement of DVS-BCB bonding adhesion. (a) DVS-BCB-bonded wafer and aluminum jig connected using AXIA EP-04 epoxy. (b) DVS-BCB-bonding-wafer-aluminum-jig connected to universal testing machine using stainless steel connection jig.

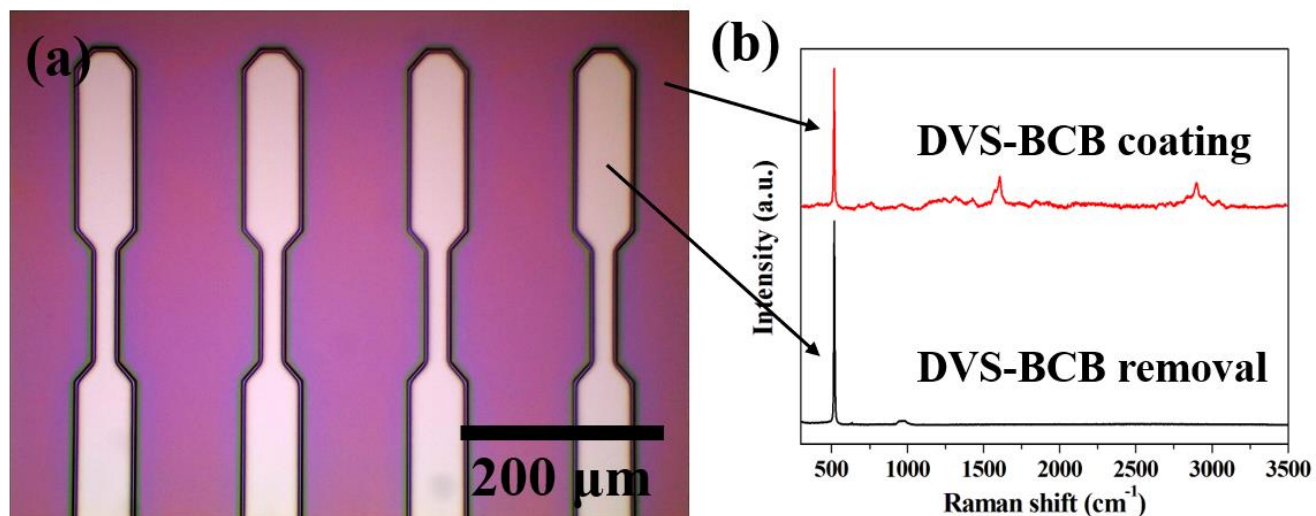


Figure S3. Raman spectra of the develop process results for the DVS-BCB patterns. (a) DVS-BCB pattern array microscopy image of the Raman measurement position. (b) Raman spectra with and without the DVS-BCB layer.

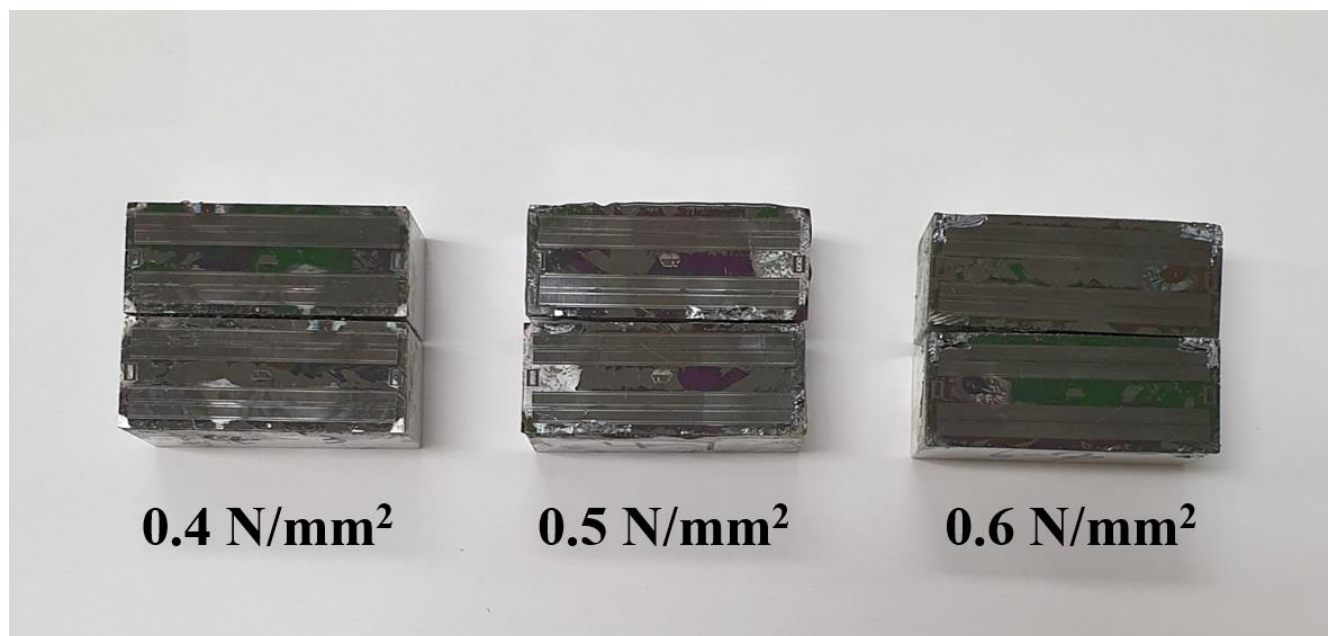


Figure S4. Optical images of samples detached after adhesion testing of DVS-BCB bonding.

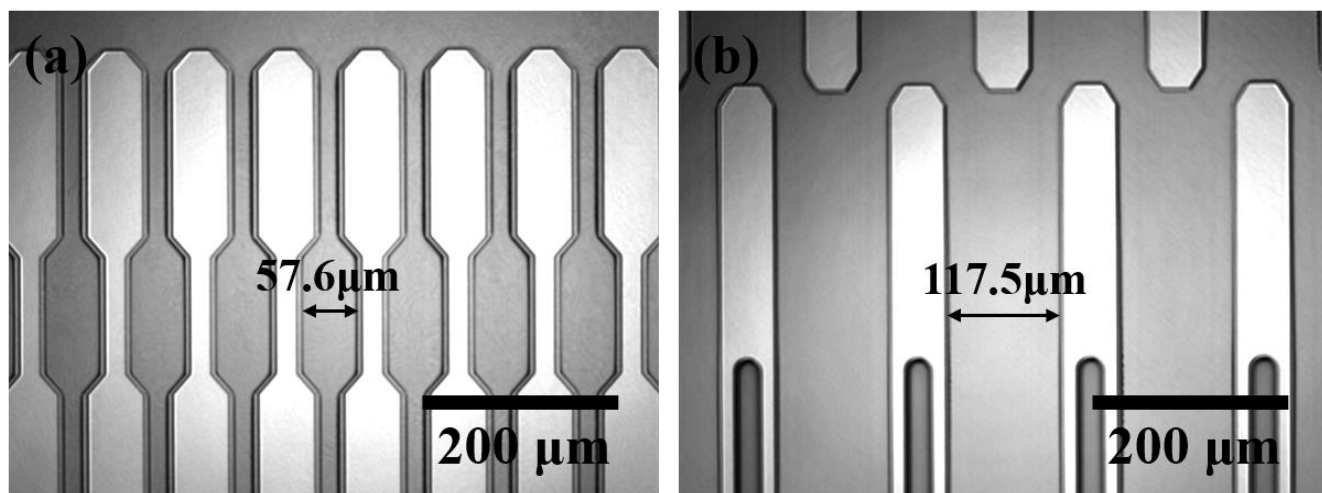


Figure S5. Near-infrared confocal laser microscopic images of the DVS-BCB bonding layer fabricated with a compressive pressure of 0.6 N/mm². (a) Super high-density patterns and (b) linear patterns.