

Support Information

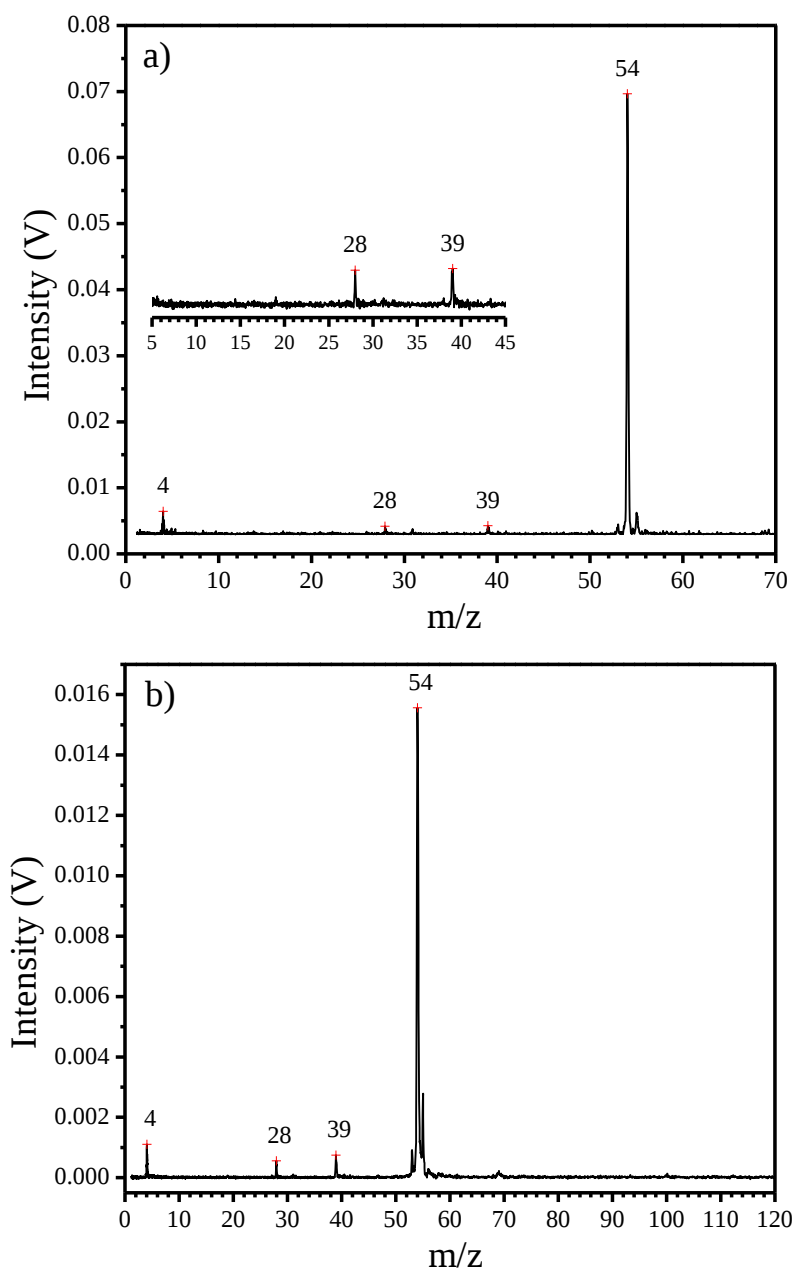


Figure 1S: 10.5 eV SPI TOF mass spectrum of a) 1,3-Butadiene at room-temperature (Inset: an enlarged picture in the mass region of 0-45 amu), b) 12 Torr of 8% BTB/He mixture recorded 10 minutes after the filament was turned on at 1200 °C.

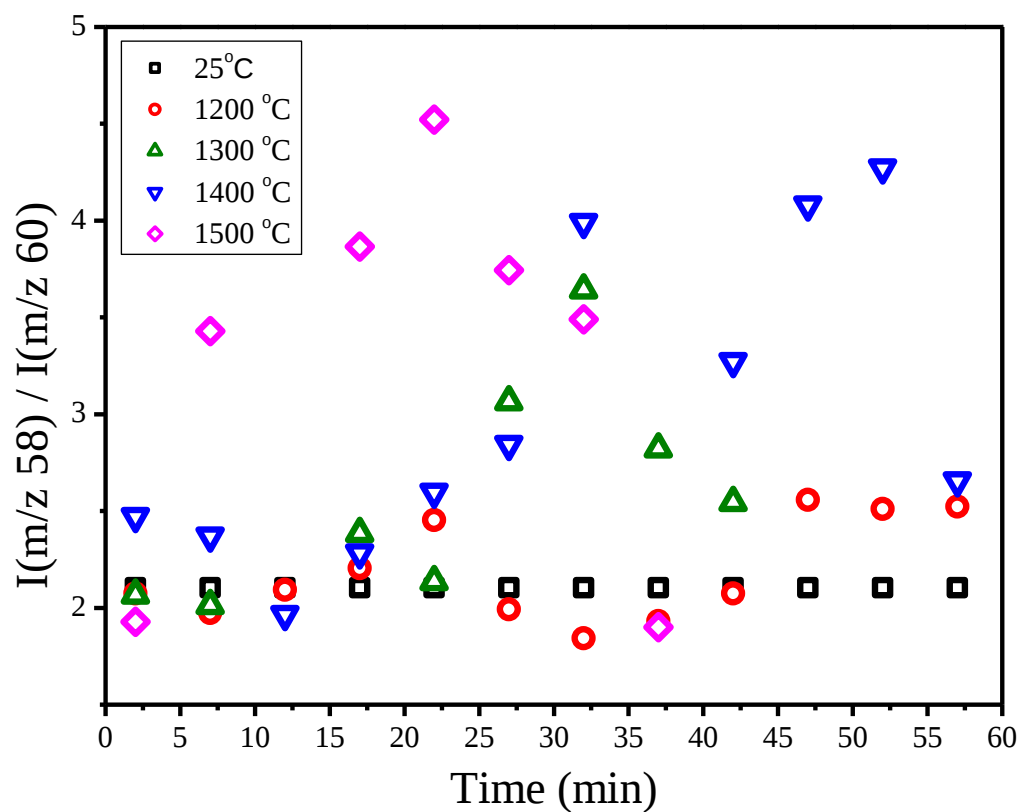


Figure 2S: The intensity ratio of the peak at $m/z\ 58$ to the parent ion peak at $m/z\ 60$ from 12 Torr of 1% DMS/He as function of filament-on time over the temperature range of 1200 to 1500 °C.

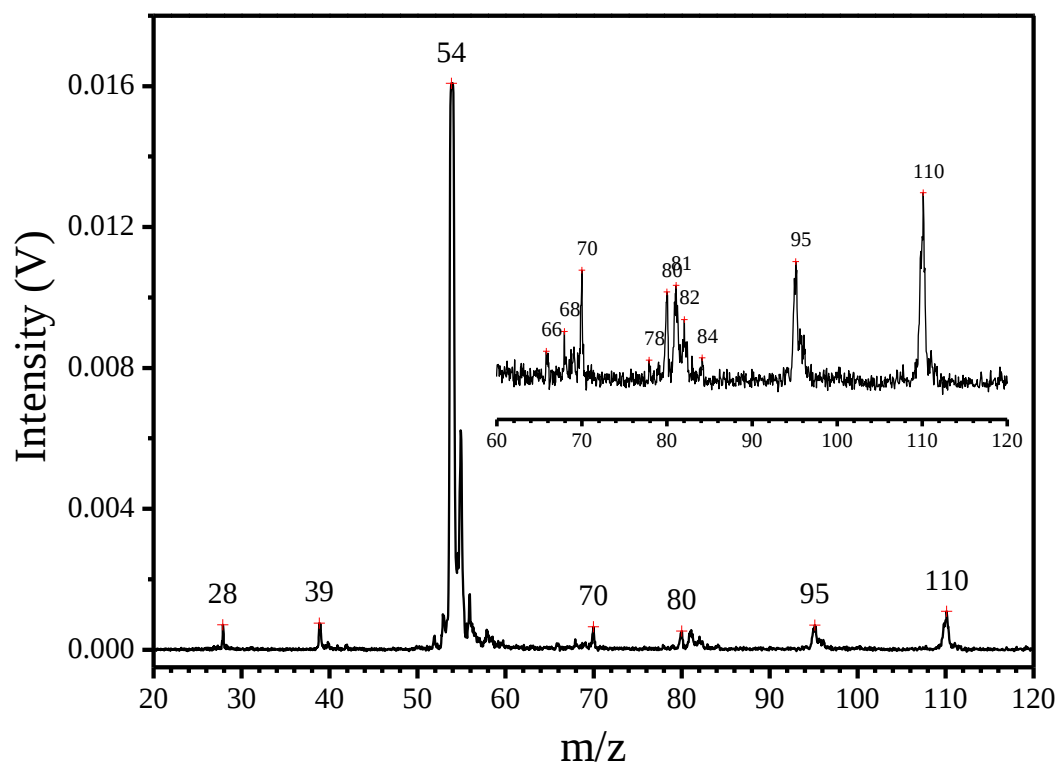


Figure 3S. 10.5 eV SPI TOF mass spectra of 12 Torr of 8% BTD in He in the reactor at a filament temperature of 1400 °C after 10 min of reaction time. The inset is an expanded graph in the mass region of 60 – 120 amu.