Q42a Molecular clouds toward the Spitzer bubble S150; possible evidence for a second Spitzer bubble formed by cloud-cloud collision

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Recently, Torii et al. (2014) presented a scenario that the Spitzer bubble RCW 120 was created by cloud-cloud collision as an alternative to the wind-blown bubble. It is important to test if the other bubbles are also formed by cloud-cloud collision. S150 is one of the Spitzer bubbles located in the region of WR46. We have made observations in the CO J=3–2 and 1–0 emission lines toward S150 at 22–30 arcsec resolution with the ASTE and Mopra telescopes. As a result, two CO clouds are found at -46 km s^{-1} and -35 km s^{-1}. The two clouds show complimentary distributions with each other and show enhanced line intensity ratios (J=3–2/J=1–0) higher than 0.75, indicating that they are heated up by the O star ionizing the inside of the bubble. The two clouds are also linked by the bridging feature in velocity. Based on these results we offer a hypothesis that the blue-shifted cloud collided with the red-shifted cloud to create a cavity and the collisional shock compression triggered formation of the exciting star, an O7 star, inside the bubble. The collision time scale is estimated to be short, $\sim 10^5$ yr.