(Pinault et al, 1987) and ROSAT (Guo and Burrows, 1993) observations suggest that the unusual morphology of VRO 42.05.01 is caused by a SN blast wave breaking out of the cloud where the SN event occurred, and expanding into another cloud across a much less dense and, presumably, hot cavity. Our numerical results are consistent with the interpretation of a passing SN blast wave across the cavity. We discuss the implications of our results on the dynamics of VRO 42.05.01 such as the breaking of the shell due to the Rayleigh-Taylor instability, the reverse shock formed by a reflection, and the rejuvenation of the cavity.

OBSERVATIONS OF C_3H_2 (2_{12} - 1_{01}) TOWARD THE SAGITTARIUS A MOLECULAR CLOUD

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We mapped the C_3H_2 2_{12} - 1_{01} transition line toward the Sgr A molecular cloud on a 1′ grid spacing. We derive C_3H_2 column densities of $\sim 10^{15}cm^{-2}$ for several clouds of the Sgr A. The fractional abundance of C_3H_2 relative to H_2 are obtained to be $1.5 \sim 3.5 \times 10^{-8}$, which are comparable to that for the cold dark cloud TMC-1. We also estimate masses of $\sim 10^5 M_\odot$ by using total C_3H_2 masses and the abundance of C_3H_2 for two clouds(M-0.13-0.08, M-0.02-0.07). From comparison of these with masses by virial theorem, it is suggested that one of two clouds(the M-0.02-0.07) may be in expansion state. The H_2 densities of $\sim 10^3 cm^{-3}$ at the cores of these clouds are obtained. We suggest that the enhanced abundance of Sgr A may be accomplished from a modified ion-molecule reaction after the passage of non-dissociating shocks, not from a quiescent ion-molecule reaction.

S140의 분자함량과 운동학적 특성

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수소전리영역 S140과 연관되어 있는 것으로 보이는 분자운에 대하여 FCRAO이 14M 전파망원경과 촛점면 어레이(QUARRY) 수신기를 이용하여 10개의 밀리미터파 분자선, $^{12}CO(1-0)$, $^{13}CO(1-0)$, $C^{18}O(1-0)$, CS(2-1), $HCO^+(1-0)$, HCN(1-0), SO(2-1), $SO_2(2_{20}-3_{13})$, OCS(8-7), 및 $HNCO(4_{04}-3_{03})$를 50″분해능으로 관측하였다. 관측영역은 33′x40′(총1900 여점)으로 이 지역에

서의 분자운과 수소전리영역의 상호관련, 활동지역과의 접촉에 의한 분자함량의 변화, 공간속도 구조와 밀도분포등에 대한 연구를 하였다.

전체분자운의 구조는 밀도가 매우 높은 중심부가 수소전리영역과 접촉하고 있는 것으로 나타나며 그 외의 지역은 북동방향으로 확장되면서 많은 덩어리구조를 보이고 있다.

이 접촉지역의 고밀도 중심부의 분자함량은 일반적인 "warm molecular cloud"들과 비슷하나 별탄생지역이나 강한 충격파지역에서 매우 분자량이 증가하는 SO의 경우는 10배 이상 증가된 것으로 나타나 수소전리영역의 활동에 영향을 받고 있는 것으로 짐작된다. OCS, SO_2, HNCO의 분자함량은 상한값 만을 얻었다.

CO OBSERVATIONS OF BARNARD 34

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With the Nagoya 4 m radio telescope, a Bok globule Barnard 34 was observed in the CO(J=1→0)emission. An extended area, 40 arcmin x 54 arcmin in right ascension and declination, was mapped at intervals of two arc minutes, and in the ^{12}CO emission only a cross-cut scan was made over 50 arcmin in RA and 60 arcmin in Dec. The resulting map of ^{13}CO integrated intensity delineates two large clumps, whose line-of-sight velocities differ from each other by 1.2 km/s. Each of the two clumps comprises again two to three smaller clumps. All these sub-structures of the globule form a long filamentary distribution, running from north-east to south-west. The globule morphology seen from the radio map is quite different from its optical image in the POSS print.

If the globule is located at distance 200pc, with the estimated LTE mass we conclude that the two clumps move too fast to form a bound system. There are three IRAS point sources in the region. Analysis of the IRAS fluxes at 60 and 100 m and of the IRAS energy spectra of the three sources suggests that the one at the center of northern clump is at an early stage of protostar and the other two near the clump boundaries at fairly evolved stages.

Multiwavelength Study of the Protostellar Object IRAS 19550+3248

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