Electronic Supplementary Information for

Microporous Organic Nanorods with Electronic Push-Pull Skeleton for Visible Light-Induced Hydrogen Evolution from Water

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Experimental Sections

Scanning (SEM) and transmission electron microscopy (TEM) images were obtained using a FE-SEM (JSM6700F) and a JEOL 2100F unit. The adsorption-desorption isotherm for N_2 (77 K) was recorded using BELSORP II-mini volumetric adsorption equipment. Powder X-ray diffraction (PXRD) patterns were obtained using a Rigaku MAX-2200. The reflectance and emission spectra were obtained by Shimadzu UV-3600 and JASCO FP-6200 spectrofluorometer. The solid phase ^{13}C-NMR spectrum was obtained on a Bruker 400 MHz DSX NMR spectrometer at the Korea Basic Science Institute (Daegu). The IR spectrum was obtained by Bruker Vertex 70. The thermogravimetic analysis (TGA) curve was obtained by Seiko Exstar 7300. Elemental analysis was performed on a CE EA1110 instrument.

Synthetic procedure of VH-MON

The tris(4-formylphenyl)amine and [1,1'-biphenyl]-4,4'-diacetonitrile were prepared according to the procedures in the literature.(ref. 17 and 18 in text) In a 50 mL Schlenk flask, tris(4-formylphenyl)amine (0.12 mmol, 39 mg) and [1,1'-biphenyl]-4,4'-diacetonitrile (0.18 mmol, 42 mg) were dissolved in THF (24 mL). To this solution, NaOH (0.12 mmol, 5.0 mg) was added. After heating at 70^{o}C for 24 hours, the resulting precipitates were retrieved by centrifugation, washed with water, methanol, methylene dichloride, and acetone, and dried under vacuum.

Synthetic procedure for VH-MON/TiO_2-Pt, eosin Y/TiO_2-Pt, and N719/TiO_2-Pt composites

For the preparation of TiO_2-Pt composite (ref. 22 in text), TiO_2 (2.0 g, Aldrich No. 637254, particle size < 25 nm, anatase) was dispersed in 50 mL methanol using a 100 mL round-bottomed flask. H_2PtCl_6 (0.50 mL, 8 wt% aqueous solution) was added to the solution. Using a 200 W Xe lamp (without an optical filter, 10.0 mW/cm^2 intensity), the reaction mixture was irradiated for 30 minutes. The resultant TiO_2-Pt composite was retrieved by centrifugation with a 3700 rpm rate, washed five times with excess methanol and dried under vacuum. For the preparation of **VH-MON**/TiO_2-Pt composite, the TiO_2-Pt (30 mg) in 20 mL methanol was treated for 30 minutes by ultrasound processor (Branson Sonifier 450, 400 W, 20 kHz, 100% vibration amplitude, 50% duty cycle, cylindrical titanium alloy probe). To the suspension, the **VH-MON** (30 mg) was added. The mixture was refluxed for 18 hours in the dark. The resultant **VH-MON**/TiO_2-Pt composite was retrieved by centrifugation, washed with methanol, and dried under vacuum. For the preparation of eosin Y/TiO_2-Pt, and N719/TiO_2-Pt composites, the dyes (0.30 mM) were dissolved in 20 mL methanol. The TiO_2-Pt powder (0.20 g) was added. The solution was

stirred for 24 hours at room temperature in the dark. The resultant dye/TiO_2-Pt composites were retrieved by centrifugation, washed with methanol, and dried under vacuum.

Photocatalytic test procedure

The triethanolamine (TEOA) was used as an electron sacrificer. First, a 10% (v/v) TEOA aqueous solution was prepared and neutralized with HCl and NaOH solution. The solution (3 mL) and spin bar were added to tube type glassware. **VH-MON**/TiO_2-Pt, eosin Y/TiO_2-Pt, or N719/TiO_2-Pt composites (8 mg) were added and dispersed in glassware. After sealing the glassware with a septum and insulating tape completely, the solution was bubbled with N_2 gas for 15 minutes using a needle and a connected bubbler. Then, 1 mL N_2 gas was replaced with 1 mL methane (internal standard) using a gas chromatography (GC) syringe. The solution was stirred and irradiated with a 200 W Xe lamp (with an optical filter to cut off the light with wavelengths shorter than 420 nm, 4.6 mW/cm^2 intensity). The temperature of the reaction mixture was maintained at room temperature with a water bath. The amount of hydrogen generated was measured using GC (Agilent 6890) with a thermal conductivity detector (TCD). It should be noted that the TCD detector has different detection sensitivities toward methane and hydrogen. The detection sensitivity of the GC used for methane and hydrogen was calibrated by the average value from ten data points obtained using the same amount of methane and hydrogen.

Figure S1. SEM images of organic materials obtained using the different volumes of solvent (THF).

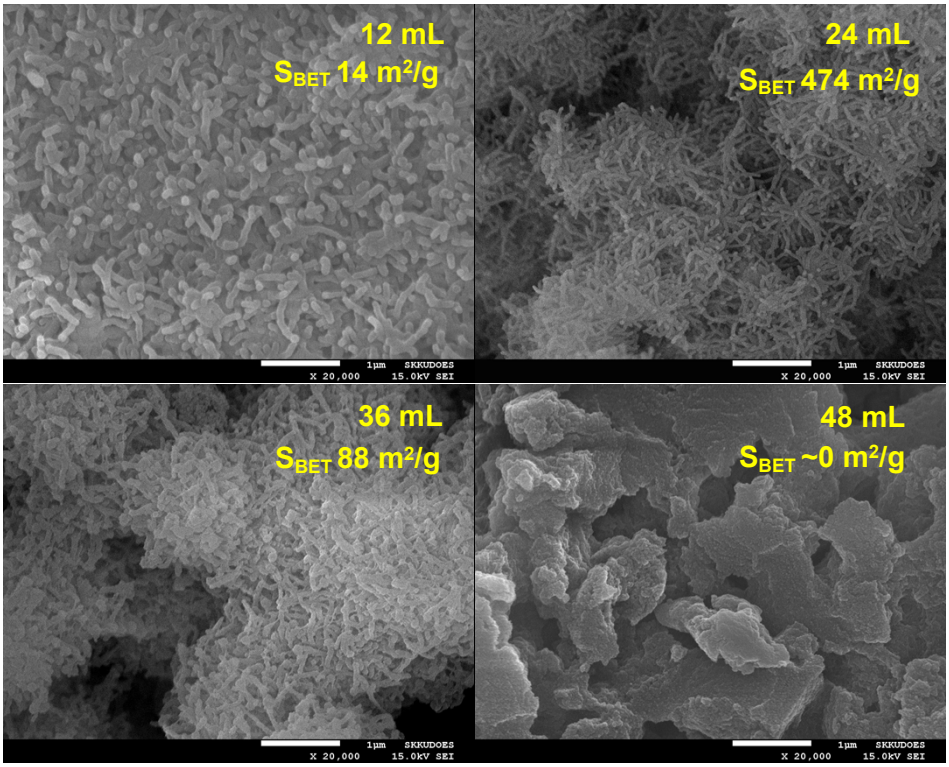


Figure S2. Low magnification-SEM image of **VH-MON**.

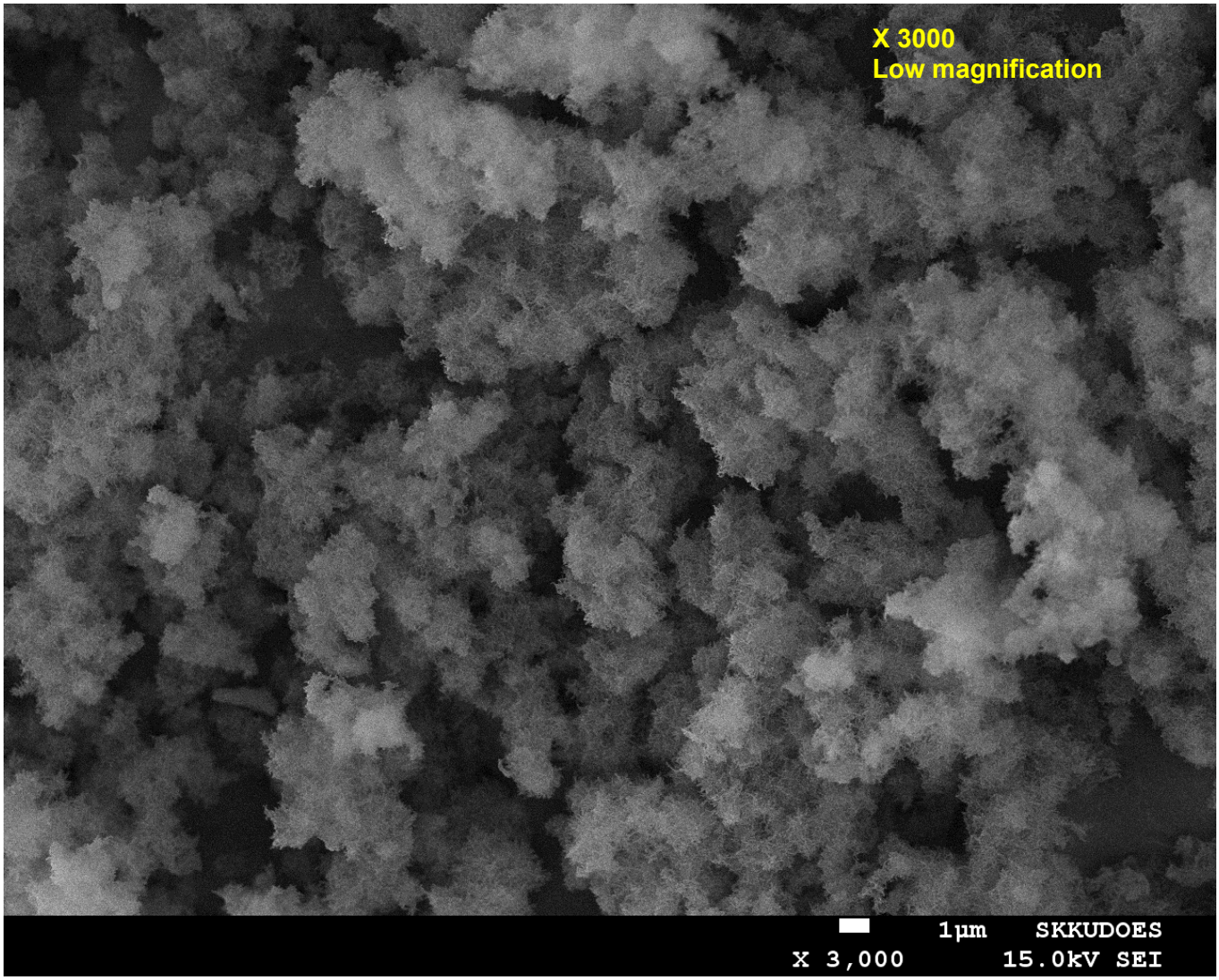


Figure S3. Thermogravimetic analysis of **VH-MON**.

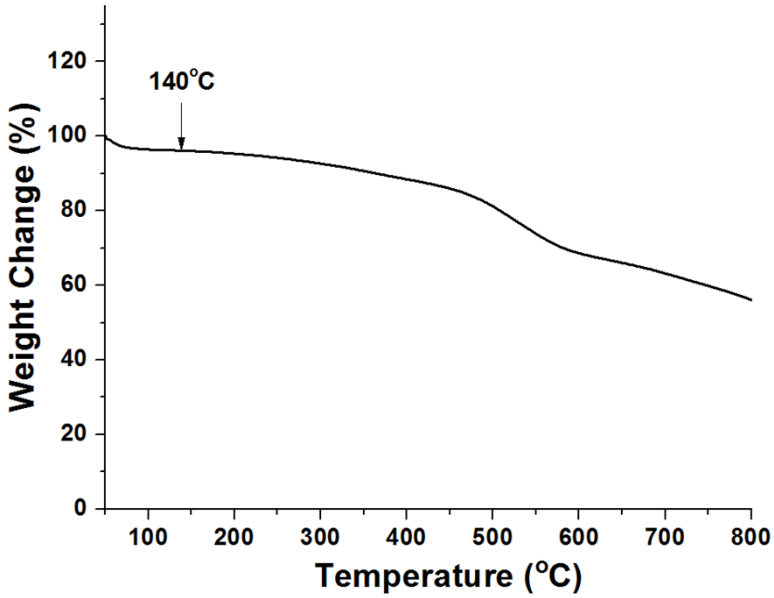
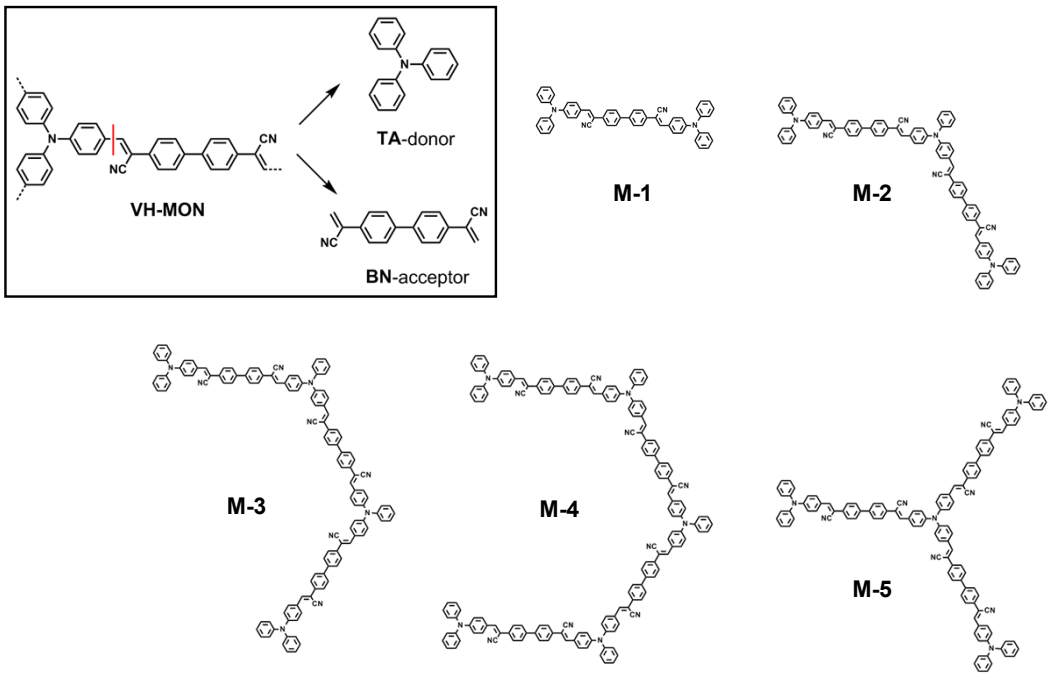
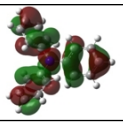
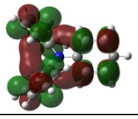
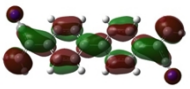
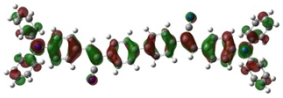
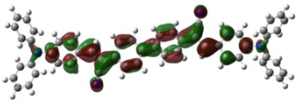
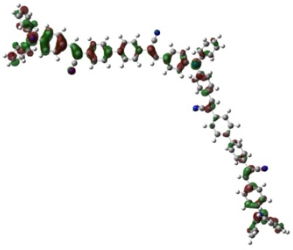
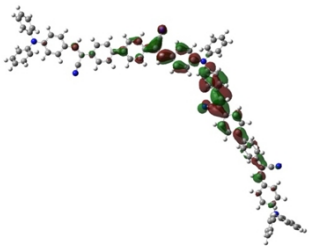
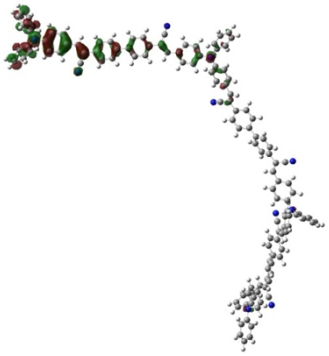
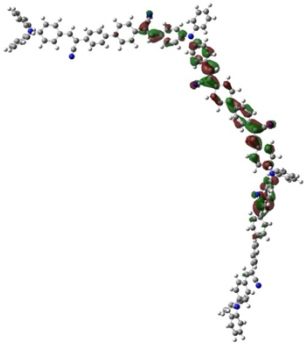


Table S1. B3LYP/6-31G* calculated HOMO-LUMO energy levels with Gaussian 09 programs (M. J. Frisch, *et al., Gaussian 09, Revision B.01*, Gaussian, Inc., Wallingford CT, 2009) of the frontier molecular orbitals of model compounds (**TA**-Donor, **BN**-Acceptor**,** and **M-1~5**) and triethanolamine (TEOA).



Compounds	HOMO (eV)	LUMO (eV)
TA-Donor	-4.95	-0.30
BN-Acceptor	-6.34	-2.21
M-1	-5.04	-2.08
M-2	-5.09	-2.31
M-3	-5.10	-2.37
M-4	-5.10	-2.39
M-5	-5.11	-2.39
TEOA	-4.99	1.88

Figure S4. B3LYP/6-31G* calculated HOMO and LUMO figures of model compounds (**TA**-Donor, **BN**-Acceptor**,** and **M-1~5**).

	HOMO	**LUMO**
TA -Donor		
BN -Acceptor		
M-1		
M-2		
M-3		

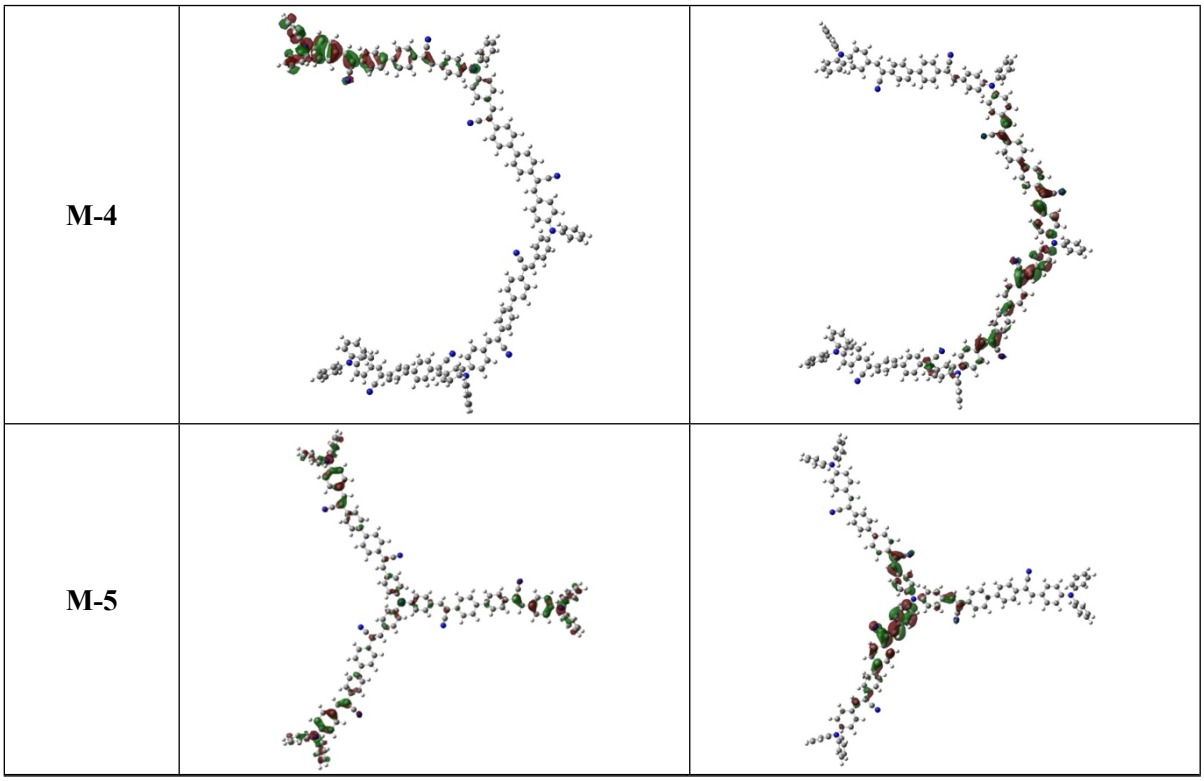


Figure S5. Cartesian coordinates (in Å) of model compounds (**TA**-Donor, **BN**-Acceptor**,** and **M-1~5**) and TEOA.

TA-Donor

N	0.00019700	-0.00011400	-0.00237200
C	-0.62171800	1.27826300	-0.00066100
C	-1.74882600	1.52292900	0.80085300
C	-0.11943800	2.31709300	-0.80144600
C	-2.36078600	2.77483500	0.79102100
H	-2.13973300	0.72799000	1.42794200
C	-0.72711500	3.57105200	-0.78999900
H	0.74691800	2.13456100	-1.42922000
H	-3.23223900	2.94541200	1.41793100
H	-0.32403600	4.36264400	-1.41648400
C	-0.79599100	-1.17798800	-0.00167000
C	-0.44430800	-2.27642600	0.79980000
C	-1.94739700	-1.26186000	-0.80154500
C	-1.22297800	-3.43204100	0.79077800
H	0.43985000	-2.21715300	1.42644300
C	-2.73028300	-2.41463400	-0.78901400
H	-2.22242200	-0.42036400	-1.42939800
C	-2.37271400	-3.50866500	0.00185900
H	-0.93491300	-4.27200500	1.41769800
H	-3.61800000	-2.46110600	-1.41457400
C	1.41835000	-0.10052300	-0.00120800
C	2.19338300	0.74942700	0.80475100
C	2.06722600	-1.05152100	-0.80562000
C	3.58358900	0.65336100	0.79543200
H	1.69968300	1.48246400	1.43479800
C	3.45708300	-1.15218300	-0.79402900
H	1.47642600	-1.70792400	-1.43660300
H	4.16657000	1.31982100	1.42592900
H	3.94143300	-1.89435600	-1.42341600
H	-2.98143700	-4.40835800	0.00327100
C	-1.85339200	3.80838700	0.00075800
H	-2.32890900	4.78504600	0.00109600
C	4.22539600	-0.29943800	0.00139200
H	5.30893700	-0.37626900	0.00248500

BN-Acceptor

C	3.56786600	0.30832000	0.01141200
C	5.80689200	-0.79044800	-0.01287000
C	2.94655500	-0.89748800	-0.34953300
C	2.74953400	1.38442600	0.39362000
N	6.40545400	-1.78764500	-0.01588000
C	1.56036800	-1.01487100	-0.35050600
H	3.55403500	-1.74771900	-0.64511300
C	1.36583000	1.26451700	0.39170900
H	3.19640900	2.31605200	0.72712100
C	0.73823400	0.06280700	0.01593100
H	1.10989300	-1.95114800	-0.66652700
H	0.76152200	2.10341100	0.72404100
C	-0.73832000	-0.06293000	0.01585900
C	-1.56036800	1.01457500	-0.35128300
C	-1.36598300	-1.26440900	0.39226400
C	-2.94655800	0.89725400	-0.35036100
H	-1.10980600	1.95063700	-0.66781700
C	-2.74969500	-1.38425400	0.39413000
H	-0.76173900	-2.10312600	0.72515100
C	-3.56793200	-0.30832200	0.01123600
H	-3.55400100	1.74732700	-0.64648100
H	-3.19670200	-2.31563300	0.72814900
C	-5.80693500	0.79045800	-0.01241100
N	-6.40495200	1.78798700	-0.01503000
C	-5.04759000	-0.43541400	-0.01684200
C	5.04750800	0.43544000	-0.01667000
C	-5.73157300	-1.59546900	-0.06030300
H	-5.22414400	-2.55309400	-0.10281600
H	-6.81558800	-1.60868400	-0.06654200
C	5.73161200	1.59545000	-0.05958400
H	6.81562400	1.60855100	-0.06591200
H	5.22432800	2.55317300	-0.10167100

M-1

N	-11.61627000	0.17377800	0.15550100
C	-12.29721500	1.39547700	-0.12733500
C	-13.31869700	1.84605600	0.72170000
C	-11.96807600	2.14881400	-1.26450800
C	-13.99913000	3.02793100	0.43348300
H	-13.57435800	1.26533700	1.60244300
C	-12.64214100	3.33825700	-1.53566200
H	-11.18662300	1.79656800	-1.93066400
H	-14.78833800	3.36493400	1.10023800
H	-12.37734300	3.91120300	-2.42034600
C	-12.39013300	-0.97409400	0.50346500
C	-12.03777500	-1.76403900	1.60808900
C	-13.52401800	-1.31310200	-0.24923400
C	-12.80178200	-2.88103100	1.94189800
H	-11.16636300	-1.49919000	2.19879300
C	-14.29205500	-2.42180500	0.10232700
H	-13.79697100	-0.70479700	-1.10585000
C	-13.93387700	-3.21398900	1.19506400
H	-12.51637800	-3.48502700	2.79898000
H	-15.16759600	-2.67342900	-0.49018500
C	-10.21307500	0.10280500	0.09475600
C	-9.41530000	1.22504300	0.39239700
C	-9.56242200	-1.09422900	-0.27074500
C	-8.03458700	1.14067400	0.32164900
H	-9.88540300	2.15776100	0.68390700
C	-8.18049300	-1.17204900	-0.32823000
H	-10.15451900	-1.96749400	-0.52157500
H	-7.44408000	2.02171100	0.56277400
H	-7.73162600	-2.11112800	-0.62672500
H	-14.53058900	-4.08144900	1.46211100
C	-13.66256700	3.78280400	-0.69206700
H	-14.19079900	4.70643400	-0.91066400
C	-7.36805000	-0.05420400	-0.03093400
C	-5.91680000	-0.02157500	-0.06567000
C	-4.97636600	-0.99368000	-0.26208800
H	-5.50784300	0.96924700	0.12016500
C	-3.52015100	-0.70093900	-0.29247900
C	-5.33120800	-2.37230300	-0.42078000
C	-2.58037900	-1.68760100	0.05384600
C	-3.02946300	0.56255000	-0.66842500
N	-5.57211900	-3.50589200	-0.54410100
C	-1.21753600	-1.41347400	0.05341800
H	-2.92403200	-2.67661400	0.34218700
C	-1.66683900	0.83423900	-0.66496700
H	-3.71724200	1.33222600	-1.00569400
C	-0.72599500	-0.14529200	-0.30008200
H	-0.52362700	-2.19040700	0.36136300
H	-1.32255000	1.81043900	-0.99417100
C	0.72599400	0.14527800	-0.30008400
C	1.21753500	1.41346100	0.05341600
C	1.66683800	-0.83425200	-0.66497200
C	2.58037900	1.68758800	0.05384100
H	0.52362700	2.19039300	0.36136200
C	3.02946200	-0.56256200	-0.66843200
H	1.32254800	-1.81045200	-0.99417500
C	3.52015000	0.70092600	-0.29248700
H	2.92403200	2.67660200	0.34218100
H	3.71724100	-1.33223700	-1.00570400
C	4.97636500	0.99367000	-0.26210000
C	5.33120400	2.37229300	-0.42079200
C	5.91680000	0.02156600	-0.06568200
N	5.57211300	3.50588300	-0.54411300
H	5.50784600	-0.96925600	0.12015500
C	7.36805000	0.05419700	-0.03094600
C	8.03459000	-1.14067900	0.32163900
C	8.18049200	1.17204400	-0.32824200
C	9.41530300	-1.22504600	0.39238900
H	7.44408300	-2.02171600	0.56276600
C	9.56242200	1.09422600	-0.27075500
H	7.73162500	2.11112200	-0.62673800
C	10.21307600	-0.10280800	0.09474600
H	9.88540600	-2.15776300	0.68390300
H	10.15451800	1.96749100	-0.52158400
N	11.61627100	-0.17377500	0.15549800
C	12.39012500	0.97410000	0.50346800
C	12.29722500	-1.39547100	-0.12733400
C	12.03775400	1.76404300	1.60808900
C	13.52401400	1.31311600	-0.24922400
C	13.31870300	-1.84604300	0.72170700
C	11.96809800	-2.14880900	-1.26450900
C	12.80175200	2.88104000	1.94190300
H	11.16633900	1.49918900	2.19878600
C	14.29204100	2.42182400	0.10234300
H	13.79697600	0.70481200	-1.10583700
C	13.99914600	-3.02791400	0.43349400
H	13.57435500	-1.26532300	1.60245200
C	12.64217200	-3.33824700	-1.53565900

H	11.18664800	-1.79656700	-1.93067200
H	12.51633700	3.48503500	2.79898300
C	13.93385000	3.21400600	1.19507700
H	15.16758500	2.67345300	-0.49016300
H	14.78835200	-3.36491300	1.10025400
C	13.66259400	-3.78278900	-0.69205800
H	12.37738400	-3.91119500	-2.42034600
H	14.53055400	4.08147000	1.46212900
H	14.19083400	-4.70641600	-0.91065200

M-2

N	-20.35344100	-4.42101700	0.21079200
C	-21.49572500	-3.82182700	-0.39964100
C	-22.70354200	-3.72536900	0.30674800
C	-21.42978800	-3.34020000	-1.71589500
C	-23.82482900	-3.15909500	-0.29737300
H	-22.75592000	-4.09731500	1.32515100
C	-22.55121800	-2.75994900	-2.30611700
H	-20.49968500	-3.42499300	-2.26928300
H	-24.75430300	-3.09078500	0.26154100
H	-22.48628200	-2.39167300	-3.32649200
C	-20.51840800	-5.65958100	0.90112200
C	-19.96931000	-5.84248000	2.17921100
C	-21.24896200	-6.70179500	0.31196100
C	-20.13902000	-7.05426800	2.84663900
H	-19.41189900	-5.03424200	2.64225300
C	-21.42858400	-7.90388100	0.99418500
H	-21.67196900	-6.56299800	-0.67801900
C	-20.87159700	-8.08914900	2.26124600
H	-19.70711700	-7.18311500	3.83544200
H	-21.99624200	-8.70330500	0.52556500
C	-19.09376800	-3.80001600	0.14126800
C	-18.97710900	-2.39727900	0.08516800
C	-17.90862900	-4.56478500	0.12311700
C	-17.72854200	-1.80145200	0.01740100
H	-19.86956200	-1.78155500	0.10374900
C	-16.66403500	-3.95965800	0.06293100
H	-17.97280200	-5.64711300	0.14700600
H	-17.66863500	-0.71589700	-0.01530300
H	-15.78647900	-4.59331400	0.03985000
H	-21.00717000	-9.02973500	2.78734000
C	-23.75462500	-2.66908100	-1.60317000
H	-24.62880600	-2.22318200	-2.06888400
C	-16.53202600	-2.55315300	0.01135400
C	-15.28330700	-1.81483500	-0.04964000
C	-13.97479500	-2.20696200	-0.00111900
H	-15.42851100	-0.73978500	-0.13017800
C	-12.84671100	-1.24619200	-0.11092500
C	-13.59977300	-3.57575700	0.19271200
C	-11.59331400	-1.54422400	0.45222100
C	-12.98517800	-0.01395300	-0.77519000
N	-13.24832500	-4.67460000	0.35778600
C	-10.53989100	-0.64005500	0.38102200
H	-11.44826500	-2.48986500	0.96598700
C	-11.93159000	0.88955700	-0.84101600
H	-13.91512500	0.22833300	-1.28065500
C	-10.68325600	0.60152200	-0.26094200
H	-9.59727400	-0.89062600	0.85908300
H	-12.06559100	1.81690700	-1.39059500
C	-9.56011900	1.56389500	-0.33242800
C	-9.78071000	2.95049400	-0.27621500
C	-8.23082900	1.12466900	-0.46784500
C	-8.72611700	3.85430500	-0.33783800
H	-10.79165500	3.32762200	-0.15174500
C	-7.17493300	2.02527300	-0.53268900
H	-8.02577000	0.06270700	-0.56747400
C	-7.39661400	3.41174500	-0.45072900
H	-8.93336900	4.91878000	-0.28036500
H	-6.16976900	1.64491300	-0.68764400
C	-6.27248400	4.38284800	-0.48004900
C	-6.60627300	5.69905400	-0.93815900
C	-5.01153500	4.05857700	-0.06769600
N	-6.92480300	6.75731300	-1.30744000
H	-4.91185400	3.05113000	0.32994800
C	-3.76880200	4.81267200	-0.02903600
C	-2.66079000	4.19782500	0.59514500
C	-3.56654900	6.10406800	-0.56521500
C	-1.43060200	4.82708800	0.70139500
H	-2.78009800	3.20562700	1.02384600
C	-2.33550400	6.73506800	-0.47442200
H	-4.37161100	6.61791700	-1.07502200
C	-1.24478200	6.11309900	0.16284700
H	-0.60974200	4.32946300	1.20646400
H	-2.20789300	7.72094900	-0.90852600
N	-0.00014100	6.77444700	0.26635800
C	0.03069100	8.19072900	0.46514000
C	1.21737200	6.06051100	0.18936000
C	-0.75354400	8.78227300	1.46521400
C	0.84720300	8.99680300	-0.34051200
C	2.31404600	6.42524600	0.99008100
C	1.37067300	4.98177800	-0.70286800
C	-0.72445900	10.16391400	1.64858400
H	-1.38225700	8.15660300	2.09105200
C	0.88268300	10.37563700	-0.13936100
H	1.44764300	8.53791100	-1.11987700
C	3.50882700	5.72891000	0.89618700
H	2.22008700	7.25180100	1.68616600
C	2.56630700	4.28522900	-0.78551500
H	0.54309500	4.69793900	-1.34447300
H	-1.33748600	10.61233100	2.42553500
C	0.09557700	10.96588800	0.85188100
H	1.51788900	10.99123500	-0.77039400
H	4.33967300	6.02597100	1.53185400
C	3.67607700	4.63669000	0.01594100
H	2.63816500	3.47115200	-1.49534800
H	0.11965400	12.04151400	1.00102600
C	4.97450300	3.98169500	0.01168600
C	5.45725700	2.89481400	-0.66008200
H	5.68631300	4.44730900	0.68935100
C	6.85974100	2.42313900	-0.52390200
C	4.62834800	2.11405500	-1.53024300
C	7.19605500	1.08540000	-0.79632900
C	7.89603300	3.28686500	-0.12515600
N	3.98853300	1.44654200	-2.23926700
C	8.50079200	0.62821400	-0.65032400
H	6.42250100	0.39194800	-1.11249100
C	9.19788800	2.82565000	0.02481200
H	7.69410500	4.34187300	0.03306800
C	9.53315300	1.48390900	-0.23104600
H	8.71629100	-0.41975200	-0.83782700
H	9.97847900	3.52809200	0.30251200
C	10.92246100	0.99546100	-0.07762400
C	11.75967500	1.47970900	0.94134700
C	11.45876100	0.03598000	-0.95471900
C	13.06349200	1.01938600	1.08654400
H	11.37522400	2.20671100	1.65109300
C	12.76330900	-0.42140000	-0.81587700
H	10.85872600	-0.32420100	-1.78553600
C	13.59228000	0.04650900	0.21989800
H	13.67765900	1.40862700	1.89311700
H	13.15199100	-1.12325500	-1.54744100
C	14.97805700	-0.45820400	0.40022900
C	15.86772100	0.42250300	1.09628800
C	15.37630400	-1.68945300	-0.04002900
N	16.55279500	1.16745400	1.67417700
H	14.58463800	-2.28507900	-0.48918400
C	16.65420500	-2.37763600	-0.00744300
C	16.68640400	-3.70507600	-0.49092500
C	17.87612000	-1.84056100	0.45835300
C	17.84699000	-4.46083800	-0.50338200
H	15.76499600	-4.15664800	-0.85177800
C	19.04343500	-2.58616700	0.44259300
H	17.92327800	-0.82205400	0.82256700
C	19.05733600	-3.91373400	-0.03420000
H	17.82331100	-5.48168000	-0.86849300
H	19.96577500	-2.13649600	0.79370700
N	20.24529000	-4.66591900	-0.04280300
C	21.24625400	-4.45732100	0.95332600
C	20.47018800	-5.66201400	-1.03955900
C	20.89642300	-4.37689800	2.30955300
C	22.59503800	-4.34862800	0.58468700
C	20.94566400	-6.93010400	-0.67470600
C	20.23714900	-5.38006800	-2.39420900
C	21.88097300	-4.17741900	3.27579400
H	19.85443700	-4.47068700	2.59921900
C	23.57477100	-4.16691700	1.55929100
H	22.86774800	-4.40773200	-0.46435800
C	21.18549900	-7.89576500	-1.65087200
H	21.12609400	-7.15065300	0.37269500
C	20.46369200	-6.35728600	-3.36188700
H	19.88103300	-4.39540400	-2.68074300
H	21.59554500	-4.11560900	4.32248800
C	23.22430700	-4.07552200	2.90793900
H	24.61597000	-4.08376600	1.25940800
H	21.55369000	-8.87410800	-1.35379100
C	20.94180600	-7.61793900	-2.99750300
H	20.27960000	-6.12492300	-4.40742200
H	23.98965000	-3.92694700	3.66424800
H	21.12437800	-8.37469900	-3.75504400

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N	25.37455200	10.20498400	1.71889200
C	26.36102400	10.56125800	0.75125500
C	27.69438800	10.75434100	1.14107900
C	26.00665500	10.74068700	-0.59444300
C	28.65290100	11.12490000	0.19929300
H	27.97093000	10.61450900	2.18139100
C	26.97489100	11.09491700	-1.53239600
H	24.97314900	10.60361400	-0.89707300
H	29.68222600	11.27128500	0.51559200
H	26.68594800	11.23160500	-2.57107300
C	25.33476100	10.92359000	2.95144900
C	25.23362600	10.24020000	4.17264300
C	25.41461700	12.32392800	2.95290000
C	25.19958700	10.95057700	5.37135800
H	25.18157700	9.15595300	4.17572800
C	25.39768000	13.02492900	4.15743300
H	25.49046300	12.85462100	2.00904500
C	25.28558500	12.34446400	5.37167600
H	25.11933200	10.40859900	6.30980000
H	25.45953700	14.10979300	4.14382000
C	24.46484900	9.16313700	1.46456300
C	24.82764200	8.06187400	0.66470400
C	23.16015400	9.19220300	2.00008900
C	23.91905000	7.04560600	0.41999100
H	25.82612300	8.00690900	0.24517600
C	22.26058500	8.16741300	1.75594000
H	22.85154000	10.03743600	2.60551300
H	24.22969200	6.20373600	-0.19463200
H	21.26762600	8.24457900	2.18057200
H	25.26555700	12.89429700	6.30822700
C	28.30110300	11.29266900	-1.14165500
H	29.05163300	11.57618500	-1.87390900
C	22.61185600	7.05560300	0.95656400
C	21.75291800	5.93067200	0.63271500
C	20.48573300	5.59318300	1.01835300
H	22.22595100	5.21442600	-0.03545400
C	19.79239400	4.37961400	0.51404000
C	19.74731500	6.37603000	1.96370400
C	18.76684400	3.77499100	1.26219200
C	20.12908400	3.79451300	-0.72020300
N	19.11406100	6.97700900	2.73572800
C	18.13047100	2.62409300	0.81118600
H	18.47589300	4.20450600	2.21616400
C	19.49561200	2.64094000	-1.16539000
H	20.86850800	4.26578700	-1.36048600
C	18.48290700	2.02421200	-0.40931600
H	17.36638300	2.16582600	1.43256500
H	19.75931900	2.23518900	-2.13792100
C	17.80742400	0.79642200	-0.88755900
C	18.50906200	-0.19379200	-1.59538700
C	16.43606900	0.58151700	-0.66111400
C	17.87679000	-1.34736200	-2.04503000
H	19.57397000	-0.07304100	-1.77208000
C	15.80012800	-0.56796500	-1.11339800
H	15.84986400	1.34761900	-0.16182300
C	16.50975300	-1.56840100	-1.80209800
H	18.45402200	-2.09561600	-2.57998400
H	14.72964200	-0.66741900	-0.96161600
C	15.84991200	-2.81685800	-2.26471800
C	16.49236200	-3.48140600	-3.36006500
C	14.72359700	-3.31799200	-1.67672600
N	17.05275400	-3.99211700	-4.24482900
H	14.37528100	-2.75480900	-0.81408900
C	13.89972500	-4.48085100	-1.96688000
C	12.82415800	-4.74345200	-1.08933500
C	14.07403600	-5.37153200	-3.04985700
C	11.97735000	-5.82693200	-1.26261100
H	12.66327300	-4.08445400	-0.23947000
C	13.22557800	-6.45191000	-3.23544100
H	14.87007000	-5.21403900	-3.76622700
C	12.16285600	-6.70306800	-2.34688100
H	11.17315100	-6.00480500	-0.55672900
H	13.37784000	-7.11065200	-4.08369500
N	11.31595500	-7.81869500	-2.53822900
C	11.86837500	-9.04057400	-3.03705200
C	9.93548700	-7.75209100	-2.24524800
C	13.01485000	-9.59058500	-2.44709000
C	11.26760600	-9.69430600	-4.12190900
C	9.26363000	-8.86369500	-1.70633100
C	9.19315200	-6.58348200	-2.50411900
C	13.55522800	-10.77551400	-2.94448700
H	13.47676300	-9.08533100	-1.60452600
C	11.80507200	-10.88728600	-4.60252900
H	10.38512200	-9.26236500	-4.58368600
C	7.90538300	-8.79604600	-1.43946500
H	9.81395400	-9.77434100	-1.49577200
C	7.83639200	-6.52093400	-2.22684900
H	9.68833600	-5.72218200	-2.93986900
H	14.44507200	-11.19242400	-2.48090200
C	12.95201500	-11.43103500	-4.01998300
H	11.33262800	-11.38477900	-5.44510000
H	7.41048900	-9.66723700	-1.01665300
C	7.14788100	-7.62854500	-1.68211900
H	7.30715000	-5.60490600	-2.45636000
H	13.37303500	-12.35667600	-4.40172500
C	5.73108000	-7.67911400	-1.35949100
C	4.73872500	-6.74193000	-1.41163100
H	5.41415200	-8.65287700	-0.99333000
C	3.32777500	-7.04694000	-1.05926700
C	4.99926300	-5.38386700	-1.78745800
C	2.45747000	-6.02732400	-0.63525000
C	2.81153800	-8.35313500	-1.13830200
N	5.16786600	-4.26800400	-2.07744300
C	1.14260700	-6.30642500	-0.28021600
H	2.82020700	-5.00595700	-0.56900400
C	1.49886500	-8.62973400	-0.77737700
H	3.42899900	-9.15915000	-1.52290100
C	0.63201200	-7.61402900	-0.33597500
H	0.50917600	-5.49841800	0.07440900
H	1.12491700	-9.64416200	-0.88207800
C	-0.76841400	-7.91044700	0.04295100
C	-1.11127700	-9.10940400	0.69016400
C	-1.80811500	-7.00741300	-0.24211200
C	-2.42555200	-9.38863500	1.04700100
H	-0.33273300	-9.82265700	0.94516500
C	-3.12337700	-7.28566700	0.10897900
H	-1.58912400	-6.09373900	-0.78716000
C	-3.46053100	-8.47587000	0.77825000
H	-2.65170800	-10.32096200	1.55580500
H	-3.90158200	-6.58450800	-0.17684200
C	-4.85731800	-8.76974800	1.19092100
C	-5.17337400	-10.15881900	1.34628400
C	-5.77323200	-7.78743000	1.43935900
N	-5.38168300	-11.29865100	1.46928000
H	-5.38346700	-6.77514100	1.35933400
C	-7.17545700	-7.83026900	1.82159900
C	-7.79908800	-6.60016100	2.12729900
C	-7.97414100	-8.99242800	1.91103000
C	-9.12690600	-6.52228400	2.51654900
H	-7.21469200	-5.68463300	2.07497200
C	-9.30627800	-8.92157700	2.28734200
H	-7.55948400	-9.96256000	1.66847500
C	-9.90897000	-7.68832900	2.60162600
H	-9.56306700	-5.56033900	2.76317400
H	-9.89668400	-9.83039400	2.33312200
N	-11.26213100	-7.63348200	3.00499300
C	-11.79825400	-8.68806400	3.80997800

C	-12.09156900	-6.54558300	2.64954600
C	-11.11975700	-9.11385100	4.96028800
C	-13.00756200	-9.30092000	3.45353100
C	-13.05798600	-6.05840400	3.54721800
C	-11.98823300	-5.93729700	1.38355900
C	-11.64355400	-10.14585900	5.73745600
H	-10.18603900	-8.63476800	5.23792300
C	-13.53270100	-10.32076600	4.24556000
H	-13.52729000	-8.97453400	2.55803200
C	-13.87852400	-5.00221600	3.18345900
H	-13.15689100	-6.50992400	4.52846600
C	-12.80495800	-4.87399700	1.03135500
H	-11.26563700	-6.31451400	0.66763100
H	-11.10891000	-10.46929200	6.62630700
C	-12.85262700	-10.75053900	5.38725200
H	-14.47010900	-10.79006000	3.95981500
H	-14.61379100	-4.63982700	3.89803900
C	-13.77653600	-4.36921100	1.92490600
H	-12.69611800	-4.44838000	0.04189500
H	-13.26072900	-11.55082600	5.99781000
C	-14.68688900	-3.26646800	1.66026400
C	-14.79185500	-2.38952100	0.61848600
H	-15.40624200	-3.10624300	2.46020400
C	-15.85030400	-1.34912800	0.55083400
C	-13.86243700	-2.39451000	-0.47234400
C	-15.65306400	-0.17054500	-0.18982200
C	-17.08003900	-1.50333600	1.21590600
N	-13.12403600	-2.35596400	-1.37287500
C	-16.62868600	0.81868400	-0.23886200
H	-14.71780000	-0.02172400	-0.72128900
C	-18.05131100	-0.51111200	1.16818200
H	-17.29896500	-2.42586000	1.74507500
C	-17.84938700	0.67650300	0.44226300
H	-16.42770200	1.73060400	-0.79369900
H	-19.00227000	-0.67859600	1.66560500
C	-18.89027300	1.72817900	0.38624900
C	-19.70760400	2.00708600	1.49449300
C	-19.10888400	2.47641500	-0.78413900
C	-20.68817000	2.99111700	1.44105700
H	-19.55486400	1.46485400	2.42329600
C	-20.09177100	3.45680300	-0.84226900
H	-18.53101000	2.25465700	-1.67679400
C	-20.89493100	3.74911400	0.27497600
H	-21.29493500	3.18560300	2.32040300
H	-20.26173600	3.97287800	-1.78229900
C	-21.93155900	4.81265300	0.23419600
C	-23.00331700	4.66345900	1.17264500
C	-21.85921600	5.87861000	-0.61849100
N	-23.84911900	4.50582100	1.95878700
H	-20.95531800	5.91183800	-1.22290900
C	-22.74861100	6.99941800	-0.86435000
C	-22.30066100	7.99803500	-1.75808000
C	-24.03163300	7.18058700	-0.29917800
C	-23.06314800	9.11263200	-2.06552900
H	-21.31589900	7.89820900	-2.20898000
C	-24.80557900	8.28704500	-0.60818800
H	-24.44190700	6.44040800	0.37620500
C	-24.34019200	9.28081900	-1.49479000
H	-22.67366600	9.86325200	-2.74431000
H	-25.79223800	8.38458500	-0.16878200
N	-25.13037000	10.40219100	-1.80263600
C	-26.04516600	10.93371000	-0.84390200
C	-25.03551900	11.03412300	-3.07868900
C	-25.63918800	11.15837300	0.47995100
C	-27.35739500	11.25127100	-1.22339900
C	-24.94554900	12.43099300	-3.16804700
C	-25.05069000	10.27064500	-4.25585800
C	-26.53867500	11.67861500	1.40897200
H	-24.62105200	10.92249800	0.77365100
C	-28.24508700	11.78711400	-0.29197400
H	-27.67386500	11.07584000	-2.24683400
C	-24.87558700	13.05001900	-4.41495600
H	-24.93298900	13.02350200	-2.25866200
C	-24.96313500	10.89706100	-5.49788600
H	-25.13254200	9.19019200	-4.19021100
H	-26.21156500	11.84604200	2.43161400
C	-27.84365100	11.99919800	1.02859300
H	-29.25935700	12.02769500	-0.59907900
H	-24.80644600	14.13317900	-4.46930200
C	-24.87869400	12.28840000	-5.58535500
H	-24.97667200	10.29344500	-6.40148200
H	-28.54004000	12.41052800	1.75364000
H	-24.81803500	12.77372500	-6.55523800

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N	26.76903700	14.88709400	5.65159900
C	27.55523600	15.85092600	4.95215700
C	28.76819500	16.29976400	5.49471600
C	27.11707200	16.37298100	3.72562300
C	29.52539400	17.25680600	4.82111700
H	29.10915500	15.89613000	6.44292100
C	27.88887800	17.31718200	3.05078500
H	26.17273800	16.03668300	3.30882700
H	30.46327000	17.59538800	5.25323800
H	27.53703800	17.71363500	2.10206000
C	26.54117400	15.07429700	7.04821300
C	26.71172200	14.01112000	7.94763500
C	26.16081100	16.33278600	7.53676900
C	26.49049900	14.20478500	9.31010300
H	27.01604500	13.03856100	7.57368900
C	25.95896300	16.52163200	8.90291000
H	26.02611600	17.15589500	6.84205300
C	26.11743500	15.45982000	9.79591300
H	26.62463600	13.37216800	9.99537300
H	25.66374300	17.50176700	9.26776000
C	26.23728000	13.77193500	4.97989000
C	26.90727700	13.19770600	3.88182100
C	25.01387000	13.19755400	5.38402700
C	26.36786600	12.10216200	3.22833300
H	27.85350700	13.61207600	3.55182900
C	24.48671800	12.09610500	4.72994500
H	24.47043200	13.63247100	6.21567900
H	26.91117500	11.67538400	2.38830600
H	23.53831500	11.70115800	5.07184500
H	25.95237300	15.60866900	10.85913700
C	29.09391900	17.76705100	3.59487900
H	29.68912000	18.50865300	3.06985000
C	25.14959700	11.50852000	3.62827300
C	24.68933700	10.35974900	2.86897900
C	23.62860300	9.51237500	3.02745900
H	25.33017300	10.12490000	2.02189500
C	23.34217100	8.40600000	2.07803400
C	22.73547700	9.61424700	4.14265100
C	22.64036400	7.26196700	2.49691300
C	23.75642600	8.46015400	0.73490100
N	21.99000400	9.65318900	5.03762900
C	22.39324600	6.20990500	1.62229600
H	22.29853300	7.19025400	3.52518400
C	23.51150700	7.40544700	-0.13567300
H	24.24256200	9.35278100	0.35303000
C	22.82781500	6.25136500	0.28672500
H	21.87924000	5.32726700	1.99196700
H	23.81693400	7.49676500	-1.17406800
C	22.56763300	5.12916800	-0.64378000
C	23.49268300	4.78060200	-1.64262100
C	21.38053800	4.37849500	-0.57023800
C	23.25057100	3.72853300	-2.51828600
H	24.43030000	5.32370100	-1.71749500
C	21.13449000	3.32746600	-1.44517600
H	20.61915300	4.65091500	0.15485800
C	22.07206000	2.96738700	-2.42975600
H	23.99229400	3.48191700	-3.27218000
H	20.18346700	2.80671200	-1.38600800
C	21.83508100	1.82553600	-3.35027400
C	22.52407200	1.89312600	-4.60515500
C	21.04294100	0.76436500	-3.01670600
N	23.11137300	1.98546100	-5.60727400
H	20.64536600	0.79723600	-2.00481800
C	20.64628100	-0.42832600	-3.74852100
C	19.92594900	-1.41305100	-3.03682400
C	20.91007100	-0.68792200	-5.11195400
C	19.50712700	-2.59375000	-3.62998400
H	19.70847000	-1.25002400	-1.98392500
C	20.48254800	-1.86023600	-5.71594700
H	21.43844500	0.03853900	-5.71620900
C	19.77695900	-2.83741400	-4.98855500
H	18.97389200	-3.33449400	-3.04383100
H	20.68776900	-2.02403500	-6.76844300
N	19.36412200	-4.03723200	-5.61256300
C	20.20981200	-4.64201900	-6.59552400
C	18.13799400	-4.65423700	-5.27903800
C	21.56897600	-4.85219700	-6.32479500
C	19.68445600	-5.02733900	-7.83686300
C	18.02310900	-6.05579200	-5.25593000
C	16.99535200	-3.88562300	-4.98280800
C	22.39081100	-5.43347900	-7.28923900
H	21.97364500	-4.55740400	-5.36153100
C	20.50976500	-5.62304500	-8.78929500
H	18.63338000	-4.85658000	-8.04818200
C	16.81165600	-6.65169000	-4.94280700
H	18.88821000	-6.67027700	-5.48043800
C	15.79021300	-4.48924300	-4.65963400
H	17.05577900	-2.80313000	-5.02009000
H	23.44327600	-5.59034300	-7.06962300
C	21.86564500	-5.82530600	-8.52247800
H	20.09268200	-5.91648700	-9.74875400
H	16.75087900	-7.73734400	-4.92580700
C	15.66109700	-5.89612800	-4.62556400
H	14.93752100	-3.85529900	-4.45219700
H	22.50771300	-6.28270900	-9.26968200
C	14.44970700	-6.63335500	-4.30494700
C	13.21817900	-6.23517600	-3.86847100
H	14.56247700	-7.70906000	-4.41962800
C	12.10320300	-7.18995600	-3.63888700
C	12.92654000	-4.86434300	-3.56978700
C	11.07751500	-6.89045000	-2.72526100
C	12.03040800	-8.41737000	-4.32189000
N	12.64870400	-3.76416600	-3.30496200
C	10.04512200	-7.78978700	-2.48448800
H	11.09854400	-5.94803900	-2.18610700
C	10.99915800	-9.31542500	-4.07649800
H	12.76539600	-8.65888100	-5.08373300
C	9.98258700	-9.02648900	-3.14854600
H	9.28971300	-7.53903500	-1.74544000
H	10.95610200	-10.23868200	-4.64701500
C	8.88261600	-9.98392400	-2.89112900
C	9.10154300	-11.37160400	-2.91790800
C	7.57565800	-9.53934100	-2.62235300
C	8.06985800	-12.27169300	-2.67735500
H	10.10179200	-11.75323300	-3.10139600
C	6.54156200	-10.43643000	-2.38489700
H	7.35674300	-8.47568800	-2.64410700
C	6.76833900	-11.82446900	-2.39022600
H	8.27833400	-13.33726500	-2.69672100
H	5.53784200	-10.05122900	-2.23295700
C	5.67866100	-12.79383300	-2.10629400
C	5.86102400	-14.10302900	-2.65984800
C	4.59035300	-12.47543000	-1.34508400
N	6.05651600	-15.15520700	-3.12072600
H	4.61156500	-11.47340800	-0.92259400
C	3.40778700	-13.23062700	-0.96312200
C	2.52035300	-12.62084700	-0.04863600
C	3.06165400	-14.51868900	-1.42942700
C	1.36744100	-13.25101300	0.39246600
H	2.75687500	-11.63203000	0.33702900
C	1.90415700	-15.15054000	-1.00213600
H	3.69096900	-15.02946500	-2.14703300
C	1.03566000	-14.53256400	-0.08242600
H	0.72099800	-12.75706800	1.10988500
H	1.65828700	-16.13356600	-1.38924600
N	-0.13293700	-15.19539500	0.35774000
C	-0.10143700	-16.61197800	0.55656200
C	-1.32761700	-14.48552000	0.61209300
C	0.92259600	-17.19574400	1.31515100
C	-1.09390000	-17.42574700	-0.00736700
C	-2.18214400	-14.87129900	1.66030200
C	-1.70512500	-13.38973400	-0.18834600
C	0.95468700	-18.57736600	1.49820500
H	1.68815200	-16.56415500	1.75517100
C	-1.06336600	-18.80470000	0.19438900
H	-1.88198300	-16.97314700	-0.60128500
C	-3.36036400	-14.17871000	1.89142300
H	-1.91422400	-15.71173000	2.29145700
C	-2.87864500	-12.69434500	0.05733700
H	-1.07356900	-13.09175300	-1.01850600
H	1.75390600	-19.01952700	2.08664900
C	-0.03864200	-19.38717500	0.94357300
H	-1.83661600	-19.42639700	-0.24856300
H	-4.00130800	-14.49373000	2.71156100
C	-3.74385800	-13.06562900	1.11108700
H	-3.13129600	-11.86773800	-0.59456500
H	-0.01359900	-20.46280600	1.09242700
C	-4.99763500	-12.41292900	1.45207700
C	-5.59049900	-11.26927900	0.99830800
H	-5.55117700	-12.93089300	2.23215800
C	-6.92108400	-10.81305800	1.47624200
C	-4.94975200	-10.40878900	0.04826500
C	-7.26571300	-9.45045700	1.44804200
C	-7.87948900	-11.71868600	1.96550300
N	-4.46173100	-9.67459900	-0.71363600
C	-8.49993400	-9.01241100	1.91393400
H	-6.55174400	-8.72475500	1.06994700
C	-9.11135300	-11.27724600	2.43280400
H	-7.67816300	-12.78550700	1.94417400
C	-9.45182200	-9.91276700	2.42173200
H	-8.71752900	-7.94831300	1.90898900
H	-9.84041600	-12.00818000	2.77039200
C	-10.76768300	-9.44390500	2.91315000
C	-11.40845200	-10.06712600	3.99730600
C	-11.42985000	-8.36295800	2.30404600
C	-12.64330500	-9.62588000	4.45911900
H	-10.91993000	-10.89231000	4.50749300
C	-12.66532900	-7.92146200	2.76121400
H	-10.99092400	-7.88916800	1.43075700
C	-13.29353700	-8.53216500	3.86139200
H	-13.10387600	-10.12609600	5.30592800
H	-13.16396800	-7.11687000	2.22924700
C	-14.59866300	-8.04754000	4.38010600
C	-15.38319300	-9.02076400	5.08055400
C	-15.01346200	-6.75478300	4.23123300
N	-15.98144500	-9.84206700	5.65092200
H	-14.28896000	-6.10020600	3.75192900
C	-16.23594500	-6.06836500	4.61617500
C	-16.27672400	-4.66884000	4.42896900
C	-17.39258200	-6.67638900	5.15356500
C	-17.38614400	-3.91082700	4.76830000
H	-15.40292600	-4.16497600	4.02266600
C	-18.51139900	-5.92707500	5.48271300
H	-17.43030600	-7.74832900	5.30062200
C	-18.53117000	-4.53085100	5.30049800
H	-17.36997000	-2.83546400	4.62790100
H	-19.38939800	-6.42521400	5.87975300
N	-19.67170300	-3.77677900	5.65700000
C	-20.43727000	-4.15985000	6.80347200
C	-20.06178100	-2.63923800	4.91409200
C	-19.80170600	-4.40202500	8.02910900
C	-21.82934300	-4.29435000	6.70783600
C	-20.60299300	-1.51304700	5.55891800
C	-19.93876600	-2.61159100	3.51147400
C	-20.55170000	-4.78323700	9.14069700
H	-18.72427500	-4.29160800	8.10309600
C	-22.57349500	-4.65995300	7.82840200
H	-22.31912700	-4.11294800	5.75612100
C	-20.99304700	-0.40659300	4.82060800
H	-20.70955800	-1.51054800	6.63836100
C	-20.31974000	-1.49660600	2.78124100
H	-19.54900900	-3.48107400	2.99273700
H	-20.04885900	-4.97028700	10.08551100
C	-21.93931100	-4.91013000	9.04731400
H	-23.65181000	-4.76290100	7.74313400
H	-21.40198600	0.45473500	5.34354100
C	-20.85489100	-0.35306700	3.41598900
H	-20.21673400	-1.52792600	1.70399800
H	-22.52130000	-5.20242400	9.91659400
C	-21.28260200	0.86782500	2.75159800
C	-21.18238100	1.29349800	1.45779700
H	-21.74908600	1.58106800	3.42739500
C	-21.73062400	2.59590200	0.99925700
C	-20.50508800	0.52332500	0.45685000
C	-21.17764600	3.25673600	-0.11154900

C	-22.81264300	3.21233100	1.65287900
N	-19.95529900	-0.06412000	-0.38595400
C	-21.66348000	4.49093500	-0.52794400
H	-20.34590200	2.80564000	-0.64458200
C	-23.29411800	4.44704600	1.23563900
H	-23.31120800	2.70522300	2.47349700
C	-22.72861100	5.12059700	0.13796100
H	-21.18695700	4.98850200	-1.36762900
H	-24.15248100	4.87745400	1.74330700
C	-23.24265300	6.43725800	-0.30336700
C	-23.72026400	7.38132200	0.62126600
C	-23.28055200	6.78826900	-1.66460200
C	-24.20025800	8.61923100	0.20941500
H	-23.68799900	7.15573100	1.68332200
C	-23.76328400	8.02333500	-2.07966500
H	-22.96810200	6.06544200	-2.41283700
C	-24.21872900	8.97605500	-1.15041200
H	-24.55185800	9.32779100	0.95349700
H	-23.82114200	8.23255400	-3.14356100
C	-24.70509700	10.31334500	-1.57755700
C	-25.61656700	10.95322300	-0.67685800
C	-24.28978700	10.91135900	-2.73435000
N	-26.34808300	11.43876100	0.08955000
H	-23.54173400	10.34876100	-3.28872600
C	-24.63186300	12.17412800	-3.36383900
C	-25.61708100	13.08467500	-2.91811800
C	-23.92026600	12.52830400	-4.53206100
C	-25.86337500	14.26802600	-3.59471600
H	-26.21271900	12.86181700	-2.04183000
C	-24.15348700	13.71329600	-5.21016500
H	-23.15004400	11.85619400	-4.90370500
C	-25.13488000	14.61402600	-4.75211100
H	-26.63682700	14.93627400	-3.23220900
H	-23.57198700	13.95388900	-6.09332000
N	-25.38403100	15.82084000	-5.42972900
C	-25.80466400	16.98400200	-4.71774800
C	-25.20171500	15.91107100	-6.84235800
C	-26.85371700	17.77227100	-5.21330100
C	-25.16468400	17.36226200	-3.52785400
C	-25.73826000	14.93239000	-7.69258200
C	-24.49704500	16.98984300	-7.39618600
C	-27.25025100	18.92017900	-4.52936300
H	-27.35154500	17.48025900	-6.13259300
C	-25.58008400	18.50171300	-2.84109500
H	-24.34489900	16.76117300	-3.14728000
C	2.69945100	10.55026900	-0.47200500
H	4.82638200	10.23992000	-0.67180600
H	0.54432400	10.46697000	-0.35841000
C	-11.83871600	-3.58530300	-0.30165800
C	-11.97672900	-4.74175900	0.48462200
C	-12.99577700	-3.08442400	-0.92504600
C	-13.20999800	-5.36157600	0.64980700
H	-11.11024900	-5.14677900	0.99955900
C	-14.22900300	-3.70414200	-0.76487900
H	-12.91970300	-2.22239000	-1.58165700
C	-14.36881900	-4.84891900	0.04057100
H	-13.28031700	-6.24820600	1.27281900
H	-15.08563100	-3.31345400	-1.30581400
C	-15.68711400	-5.50287400	0.24478500
C	-15.63849600	-6.89158200	0.59308000
C	-16.86890600	-4.82367500	0.14051100
N	-15.54988800	-8.01667400	0.88364600
H	-16.76095500	-3.75829700	-0.05152900
C	-18.25419100	-5.24142400	0.26200300
C	-19.24207000	-4.23243200	0.20588500
C	-18.70977300	-6.57006600	0.42366100
C	-20.59358700	-4.51307000	0.31831500
H	-18.93082100	-3.19687000	0.08792400
C	-20.06007300	-6.86106400	0.52688100
H	-18.00422400	-7.39099400	0.45170100
C	-21.03338300	-5.84119300	0.48211900
H	-21.31746100	-3.70628200	0.28726000
H	-20.37436500	-7.89342900	0.63387100
C	9.02403500	-8.44206300	-0.29689800
C	10.08664300	-7.98229500	0.49963100
C	9.17993300	-9.69009900	-0.92642400
C	11.24304000	-8.73501500	0.66831000
H	9.99546000	-7.03323300	1.02010700
C	10.33635600	-10.44281700	-0.76280900
H	8.40230300	-10.05544500	-1.59114500
C	11.38951100	-9.99043500	0.05246600
H	12.03986100	-8.35190800	1.29880600
H	10.43601900	-11.37617000	-1.30867200
C	12.61837300	-10.79941200	0.25915700
C	13.79200800	-10.05749500	0.61177300
C	12.62757200	-12.16227900	0.15218800
N	14.71767400	-9.41350700	0.90594400
H	11.65335100	-12.60589400	-0.04237200
C	13.68725300	-13.14755600	0.27350300
C	13.31471100	-14.50977600	0.22300400
C	15.06467500	-12.86957700	0.42898400
C	14.23976300	-15.53438300	0.33517100
H	12.26324600	-14.76416800	0.10952300
C	15.99814100	-13.88779600	0.53104700
H	15.41708400	-11.84598600	0.45161100
C	15.60900200	-15.24302700	0.49194600
H	13.90861700	-16.56659600	0.30887400
H	17.04838300	-13.63738800	0.63254600
C	2.79155200	12.01540400	-0.27677200
C	1.91325100	12.69488500	0.58422200
C	3.75474000	12.78253800	-0.95651000
C	1.99971700	14.07015800	0.76787500
H	1.16871000	12.13422500	1.14214300
C	3.84036000	14.15779900	-0.77848000
C	-25.55840600	15.02780600	-9.07142600
H	-26.29461300	14.10282700	-7.26727000
C	-24.33627900	17.08601900	-8.77750100
H	-24.08073200	17.74773900	-6.73996600
H	-28.06488500	19.52116600	-4.92449800
C	-26.62083900	19.28885600	-3.33858700
H	-25.07641400	18.78171700	-1.91981000
C	-24.86052200	16.10509400	-9.62190700
H	-25.97995700	14.26304400	-9.71829700
H	-23.78778900	17.92708100	-9.19311500
H	-26.93745500	20.18007000	-2.80444300
H	-24.72855900	16.18027500	-10.69746500

M-5

N	-0.01061600	-0.01793000	-0.59086800
C	0.98944900	-1.02256900	-0.58834000
C	2.15599600	-0.87249900	0.17899300
C	0.83741400	-2.18787100	-1.36036500
C	3.13031200	-1.85871700	0.16508200
H	2.29281300	0.01652700	0.78499300
C	1.80779800	-3.17835100	-1.35706000
H	-0.04759700	-2.30950700	-1.97564700
H	4.02451300	-1.72250300	0.76853000
H	1.65429000	-4.05268500	-1.97676000
C	0.36087600	1.35059200	-0.58799300
C	-0.33724000	2.28280500	0.19634700
C	1.43326400	1.80322100	-1.37638300
C	0.03182300	3.61918600	0.18263200
H	-1.16544700	1.95484600	0.81516400
C	1.80735600	3.13842700	-1.37444900
H	1.96990800	1.09917500	-2.00332400
C	1.11700700	4.08939600	-0.58982600
H	-0.52087200	4.32327500	0.79994500
H	2.63136800	3.44375500	-2.00664300
C	-1.38126400	-0.37906700	-0.58664900
C	-1.83765900	-1.46258400	0.18142300
C	-2.31284000	0.33823600	-1.35787700
C	-3.18011300	-1.80882600	0.16835200
H	-1.13786000	-2.02808000	0.78706100
C	-3.65692000	-0.00233900	-1.35356200
H	-1.97345600	1.16413900	-1.97374500
H	-3.51166900	-2.65030800	0.77197900
H	-4.33569900	0.56989800	-1.97319400
H	4.41716800	12.30032900	-1.66979000
C	2.97540800	14.83276300	0.10197200
H	1.31050300	14.56001300	1.44921600
H	4.56468800	14.71729700	-1.36262700
C	3.07690100	16.29807600	0.32556700
C	1.87598400	16.93692100	0.77481600
C	4.24180100	16.99076900	0.14602800
N	0.87908400	17.41140400	1.14788200
H	5.09631400	16.37372300	-0.12335600
C	4.57486800	18.39872400	0.26905900
C	5.93152300	18.75968400	0.10640300
C	3.66392300	19.44794500	0.53027600
C	6.36588200	20.07060100	0.20995000
H	6.66390800	17.97978200	-0.08991700
C	4.08800200	20.76308600	0.62604400
H	2.60737000	19.23985000	0.64323800
C	5.44763100	21.10581800	0.47323400
H	7.41915100	20.30151500	0.09518400
H	3.35913600	21.54424500	0.81191800
N	5.87290000	22.44191200	0.57766000
C	6.99500700	22.90942100	-0.17025700
C	5.19565500	23.35814100	1.43784900
C	7.10751100	22.62458300	-1.53950100
C	7.98935200	23.67550900	0.45542100
C	4.86828300	24.64280800	0.98027400
C	4.86744100	22.99265900	2.75200500
C	8.20440400	23.08892700	-2.26331000
H	6.33313000	22.04206500	-2.02878700
C	9.07418200	24.15004600	-0.27991200
H	7.90453500	23.89557800	1.51493200
C	4.22711300	25.54530200	1.82701700
H	5.11954200	24.92644100	-0.03688700
C	4.21046800	23.89565600	3.58606400
H	5.12845100	22.00268300	3.11270000
H	8.27855900	22.86164400	-3.32343200
C	9.19098200	23.85645200	-1.64012900
H	9.83742100	24.74236900	0.21764200
H	3.97882200	26.53726500	1.45925600
C	3.89048100	25.17668500	3.13118400
H	3.96071000	23.59886500	4.60114100
H	10.04060400	24.22313100	-2.20897500
H	3.38452900	25.88003300	3.78627600
N	-22.40216600	-6.14265400	0.59421300
C	-22.84292100	-7.25311600	1.37556700
C	-23.38100800	-5.34014400	-0.06547100
C	-22.33108900	-7.46571100	2.66444700
C	-23.80779900	-8.13407500	0.86582700
C	-24.52357700	-4.91189700	0.62602000
C	-23.22170100	-4.98697800	-1.41400700
C	-22.76938500	-8.55091800	3.42132400
H	-21.59164500	-6.77976300	3.06564600
C	-24.25319500	-9.20643600	1.63673100
H	-24.20317300	-7.97244200	-0.13205500
C	-25.49020300	-4.14690500	-0.02457800
H	-24.64741400	-5.18361900	1.66959400
C	-24.18520900	-4.20755600	-2.05187500
H	-22.34417000	-5.32713200	-1.95496700
H	-22.36321100	-8.70474000	4.41741100
C	-23.73427400	-9.42427000	2.91473700
C	2.98590500	-3.04452000	-0.58863100
C	-4.13305300	-1.08788300	-0.58478600
C	-5.51623500	-1.53627500	-0.51337200
C	-6.67982400	-0.99106100	-0.97479600
H	-5.63682700	-2.47012300	0.03112200
C	-7.99592700	-1.66189500	-0.81873200
C	-6.71333100	0.29192300	-1.61415700
C	-9.18406800	-0.91194300	-0.77496000
C	-8.10119200	-3.06037700	-0.71320700
N	-6.78919400	1.33503000	-2.12755300
C	-10.41701600	-1.53077800	-0.60411600
H	-9.13901600	0.16978000	-0.85997900
C	-9.33500000	-3.67564900	-0.54124800
H	-7.21431600	-3.67995600	-0.80724800
C	-10.52412700	-2.92656600	-0.47872900
H	-11.31060300	-0.91678100	-0.53905600
H	-9.38288800	-4.75993100	-0.49922000
C	4.06877600	-4.01495000	-0.51696200
C	4.18618200	-5.29230800	-0.98474400
H	4.93383400	-3.65221600	0.03365800
C	5.42818000	-6.09155300	-0.82549400
C	3.09909200	-5.96438800	-1.63453000
C	5.37961800	-7.49588100	-0.78898000
C	6.68823000	-5.47768400	-0.70993600
N	2.23966800	-6.55298900	-2.15641000
C	6.53487400	-8.24916100	-0.61465000
H	4.42341100	-8.00213000	-0.88294600
C	7.84073700	-6.23349100	-0.53421800
H	6.77640600	-4.39906800	-0.79941700
C	7.79334200	-7.63838800	-0.47808800
H	6.45487600	-9.33073500	-0.55538100
H	8.80077400	-5.72795000	-0.48510300
C	1.41794500	5.51202200	-0.51644100
C	2.44420500	6.25957700	-1.01881100
H	0.69255400	6.07259100	0.06872400
C	2.52271700	7.73300300	-0.84541600
C	3.54058500	5.66319900	-1.72455800
C	3.76347800	8.39340100	-0.86929100
C	1.36946400	8.51551700	-0.65569100
N	4.45603500	5.22034800	-2.29309000
C	3.84804700	9.76827400	-0.68240900
H	4.67342000	7.82031100	-1.02050100
C	1.45766000	9.88920200	-0.46704700
H	0.38737900	8.05398300	-0.69611000
H	-25.00065400	-9.88183500	1.22923800
H	-26.37069400	-3.82188400	0.52315700
C	-25.32525800	-3.78657700	-1.36361600
H	-24.04985400	-3.94193400	-3.09693200
H	-24.07842600	-10.26519700	3.50991900
H	-26.07775700	-3.18565200	-1.86615300
N	16.56113700	-16.27168500	0.60252600
C	16.35956600	-17.52521800	-0.04937000
C	17.74853900	-16.08592600	1.37321400
C	15.95812700	-17.57376300	-1.39294600
C	16.57959700	-18.72409000	0.64459500
C	18.99299300	-16.46869100	0.85207500
C	17.68288100	-15.53678500	2.66246700
C	15.76784100	-18.80246700	-2.02293300
H	15.79860600	-16.64767300	-1.93637100
C	16.40378600	-19.94812300	0.00149100
H	16.88919100	-18.68886800	1.68436000
C	20.14999300	-16.30677700	1.61218500
H	19.04559700	-16.89122300	-0.14640700
C	18.84720600	-15.36204100	3.40851800
H	16.71986600	-15.24907800	3.07247000
H	15.45720700	-18.82520800	-3.06409100
C	15.99269600	-19.99533200	-1.33218000
H	16.57804500	-20.86910600	0.55137200
H	21.10785500	-16.60698700	1.19594700
C	20.08518900	-15.74886300	2.89068300
H	18.78235000	-14.93392500	4.40519000
H	15.85093500	-20.95102900	-1.82860300
H	20.98958300	-15.61733700	3.4777180

TEOA

N	-0.00915700	-0.20354400	-0.31824000
C	-1.31795300	-0.25001100	-0.95900300
H	-1.65902500	0.78142200	-1.08342200
H	-1.20188800	-0.66949300	-1.97014800
C	0.64957800	-1.48397000	-0.12330900
H	0.50527400	-1.89428000	0.89320900
H	0.20901200	-2.20896500	-0.81955100
C	0.13682600	0.77671300	0.76554900
H	-0.83406900	0.99850200	1.22306600
H	0.77897400	0.35479600	1.54435700
C	-2.41897800	-1.06195100	-0.26661700
H	-3.29891500	-1.08500100	-0.93287600
H	-2.08921300	-2.10477200	-0.12791900
O	-2.73921500	-0.46230900	0.98541300
H	-3.38263200	-1.03055500	1.43453900
C	2.14753100	-1.45850600	-0.42067200
H	2.52608600	-2.49511500	-0.42551300
H	2.29924400	-1.02987300	-1.42253600
C	0.77556600	2.07806500	0.29874200
H	0.99858900	2.70633000	1.17889800
H	1.72428400	1.84627700	-0.20570700
O	2.81754500	-0.68693200	0.57496800
H	3.74624900	-0.60487400	0.31214600
O	-0.13255500	2.74610900	-0.57881200
H	0.34050000	3.48343000	-0.99156700

Figure S6. SEM images of **VH-MON**/TiO_2-Pt composites before and after the five successive photocatalytic reactions.

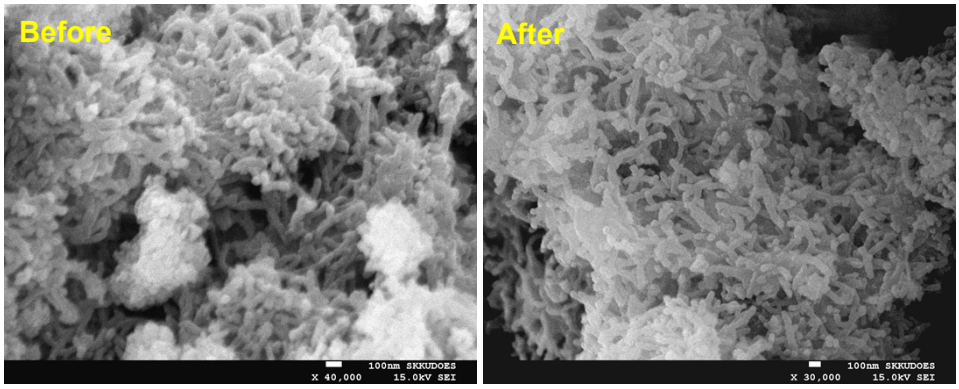


Figure S7. A plot of $(F(R)h\nu)^2$ versus photon energy ($h\nu$) using the reflectance spectrum of **VH-MON** (based on the Kubelka-Munk theory).

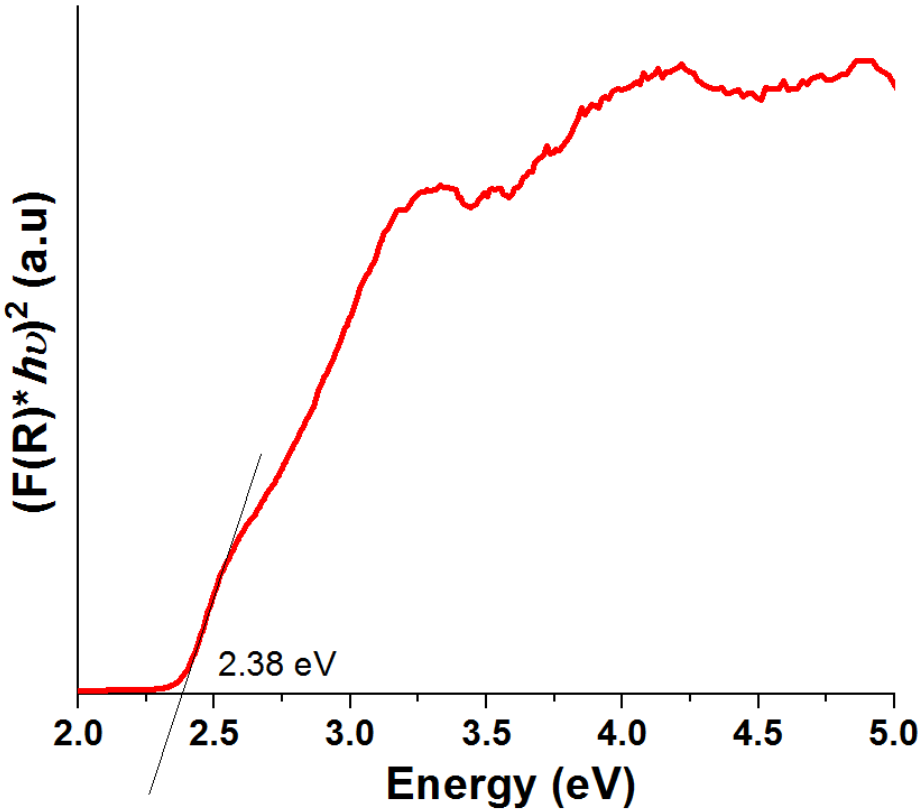
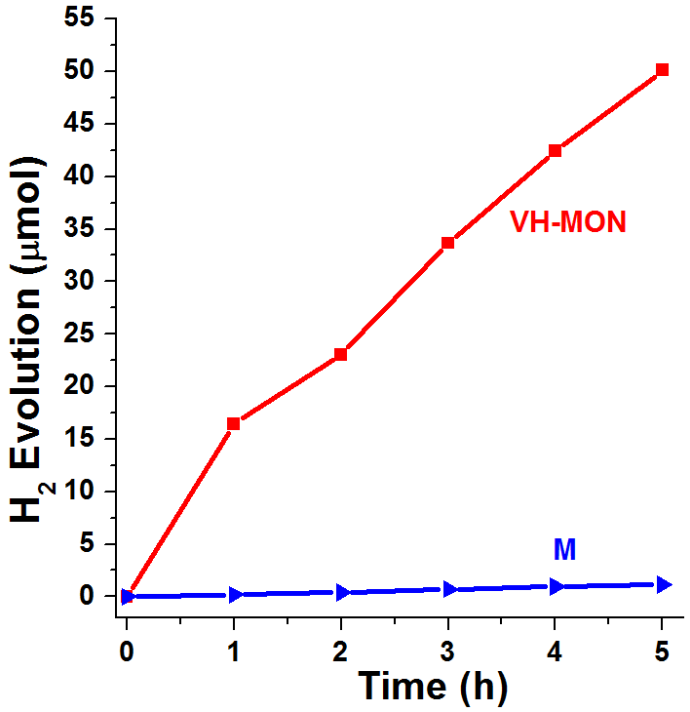
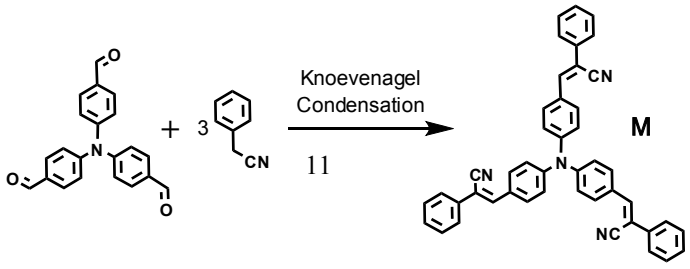


Figure S8. Visible light-induced hydrogen production from water using monomeric dye* (**M,** blue color) and **VH-MON** (red color).



Experimental procedure for monomeric dye (M**)*



M is a known compound (ref. Tomoni, O., *Electrophotographic photosensitive materials*, Jpn. Kokai Tokkyo Koho JP07175236, **1995**). For synthesis of **M**, tri(4-formylphenyl)amine (1.0 mmol, 330 mg) and benzyl cyanide (3.3 mmol, 390 mg) were dissolved in THF (30 mL) in a 50 mL Schlenk flask,. To this solution, NaOH (3.0 mmol, 120 mg) in 10mL EtOH was added. The reaction mixture was heated at 70°C for 4 hours. The crude mixture was extracted with dichloromethane, and the organic layer was dried over $MgSO_4$ and then concentrated in vacuo. The residue was purified by silica gel column chromatography with n-hexane/EtOAc. HRMS (EI^+) calc. for $[C_{45}H_{31}N_4]^+$ 627.2549, found 627.2545. **M** (4 mg) and TiO_2-Pt (4 mg) were used in photocatalytic reaction. Other conditions were same with those for **VH-MON**-TiO_2-Pt composite. As shown below, after 5 hours, 1.1 μmol of hydrogen evolution was observed.

Table S2. External quantum efficiencies of photocatalytic systems.

run	**Eosin-Y**/TiO_2-Pt		**N719**/TiO_2-Pt		**VH-MON**/TiO_2-Pt	
	moles of H_2 (mmol)	External QE[a] (%)	moles of H_2 (mmol)	External QE[a] (%)	moles of H_2 (mmol)	External QE[a] (%)
1	82	8.6	43	4.5	50	5.2
2	12	1.3	26	2.7	47	4.9
3	6	0.6	19	2.0	52	5.5
4	2	0.2	12	1.3	46	4.8
5	-	-	-	-	45	4.7

[a]The external quantum efficiencies (QE) were measured under same photocatalytic reaction conditions by comparison of the number of produced hydrogen molecules with the number of incident photons for 5 hours. The focused light intensity and area on the reaction tube (20 cm distance between light source and reaction tube) were 4.6 mW cm^{-2} and 6 cm^2, respectively. The QEs were calculated using the following equations.

$$\frac{Photons}{\Delta t} = \frac{Wattage\ of\ flux}{h \cdot \nu}$$

$$Quantum\ Efficiency(\%) = \frac{2\times number\ of\ hydrogen\ (H_2)\ molecules}{number\ of\ incident\ photons}$$

(*h*: planck constant, *v*: frequency of light)