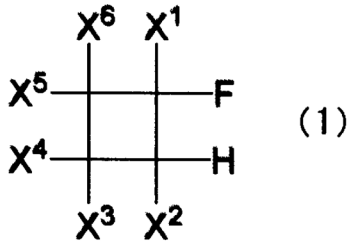
CLAIMS

[Claim 1]

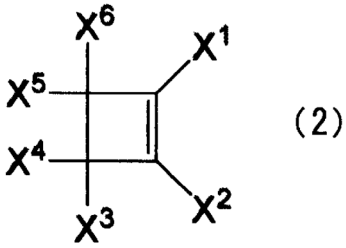
A method for producing a cyclobutane represented by formula (1):



(1)

wherein X^1, X^2, X^3, X^4, X^5, and X^6 are the same or different and represent a hydrogen atom, a halogen atom, or a perfluoroalkyl group,

the method comprising reacting a cyclobutene represented by formula (2):



(2)

wherein X^1, X^2, X^3, X^4, X^5, and X^6 are as defined above with hydrogen fluoride in the presence of a catalyst in a gas phase.

[Claim 2]

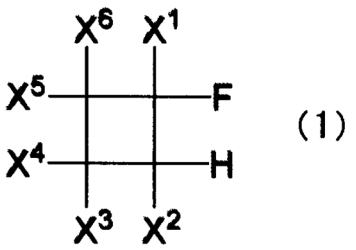
The method according to claim 1, wherein 0.1 mol to 100 mol of the hydrogen fluoride is supplied per mol of the cyclobutene represented by formula (2) to perform the reaction.

[Claim 3]

The method according to claim 1 or 2, wherein the catalyst is at least one member selected from the group consisting of activated carbon and chromium compounds.

[Claim 4]

A composition comprising a cyclobutane represented by formula (1):



(1)

wherein X^1, X^2, X^3, X^4, X^5, and X^6 are the same or different and represent a fluorine atom or a perfluoroalkyl group, wherein the cyclobutane represented by formula (1) is present in an amount of 99 mol% or more based on the total amount of the composition taken as 100 mol%.

[Claim 5]

The composition according to claim 4, which is for use in cleaning gas, etching gas, deposit gas, or a building block for organic synthesis.