**Supplementary material**

**Method of determination of GC yield:**

Firstly response factor needs to be determined.

Let the response factor be $F$ for the olefins with respect to internal standard.

Now, area of olefin signal / moles of olefin = $F \times$ area of standard signal / moles of standard.

That is, \[ \frac{a_o}{m_o} = F \times \frac{a_s}{m_s}. \]

Therefore, \[ F = \frac{a_o \times m_s}{a_s \times m_o}. \tag{1} \]

where $m_o$ and $m_s$ are the moles of olefin and that of standard respectively. $a_o$ and $a_s$ are the area of olefin and that of standard respectively at zero time of the mixing.

This equation presumes a linear response of the detector to both olefin and the standard. Constancy of $F$ has been checked by varying randomly the moles of olefins and recording the chromatogram at zero time.

Similarly, a known quantity of epoxide is mixed with the same quantity of the standard as in equation (1) and is chromatographed to find the response factor of this system.

Therefore, \[ F' = \frac{a_e \times m_s}{a_s' \times m_e}. \tag{2} \]

where $a_e$ and $a_s'$ are the area of epoxide and standard, and $m_e$ and $m_s$ are the moles of epoxide and standard, respectively. The $F'$ = response factor for the epoxides with respect to standard.

Constancy of $F'$ has been checked by varying randomly the moles of olefins. The constancy of both $F$ and $F'$ having been checked, varying moles of standard randomly without changing the moles of olefin and epoxide respectively, it can be concluded that equation (1) and (2) should always be valid.

In case of olefin after reaction is over,

\[ \frac{a_o'}{m_o'} = F \times \frac{a_s''}{m_s'}. \]

Therefore, \[ m_o' = \frac{a_o' \times m_s'}{a_s'' \times F}. \tag{3} \]

where $a_o'$ and $a_s''$ are the area of olefin and standard respectively. $m_o'$ is the unknown moles of olefin and $m_s'$ is the moles of standard.

From this equation $m_o'$ can be determined by applying known values of $a_o'$, $a_s''$ and $m_s'$. 
In the case of epoxide after the reaction is over,

\[
a_{e''} / m_{e''} = F' \times a_{s'''} / m_{s'''}
\]

Therefore, \( m_{e''} = a_{e''} \times m_{s'''} / a_{s'''} \times F' \) \ldots\ldots\ldots (4), where \( a_{e''} \) and \( a_{s'''} \) are the area of epoxide and standard respectively. \( m_{s'''} \) is the moles of standard and \( m_{e''} \) is the unknown moles of epoxide.

Thus, from the equation (4) \( m_{e''} \) have been calculated, as all other terms are known.

Therefore, \% GC yield = \([\text{moles of epoxide } (m_{e''}) / \{\text{moles of olefin } (m_{o'}) + \text{moles of epoxide } (m_{e''})\}]\times100\).