Journal Name

ARTICLE TYPE

Cite this: DOI: 10.1039/xxxxxxxxxx

A Method for Studying the Diffusion of Quaternary Ammonium Cations Through Polymer Phases†

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Received Date
Accepted Date

DOI: 10.1039/xxxxxxxxxx

www.rsc.org/journalname

The mobility of organic cations in polymeric phases is an important property to consider when using these materials as active ingredients in coatings. Here we describe a method for extracting such compounds from polymeric samples and how analysis of these extracts can yield insights about the diffusivity of molecules in a polymeric phase.

1 Introduction

Diffusion in polymeric phases is an important phenomenon which influences many fields. The ability to control the release of active compounds from a polymeric vehicle may be influenced by the diffusivity of these compounds, especially when strong interactions exist between the active compound and the vehicle. Particularly interesting are those cases in which these interactions can be modified to tune the diffusivity of the mobile compound.

In order to assess how different structural features assess the diffusivity of an analyte, the kinetics of analyte release must be measured.

Fig. 1 An example figure caption – the image is from the *Physical Chemistry Chemical Physics* cover gallery.

1.1 Tables

Tables typeset in RSC house style do not include vertical lines. Table footnote symbols are lower-case italic letters and are typeset at the bottom of the table. Table captions do not end in a full point.[4,5]

Table 1 An example of a caption to accompany a table

Header one (units)	Header two	Header three
1	2	3
4	5	6
7	8	9
10	11	12

Adding notes to tables can be complicated. Perhaps the easiest method is to generate these manually.§

2 Equations

Equations can be typeset inline *e.g.* $y = mx + c$ or displayed with and without numbers:

$$A = \pi r^2$$

$$\frac{\gamma}{\varepsilon x} r^2 = 2r \tag{1}$$

You can also put lists into the text. You can have bulleted or numbered lists of almost any kind. The `mhchem` package can also be used so that formulae are easy to input: `\ce{H2SO4}` gives H_2SO_4.

For footnotes in the main text of the article please number the footnotes to avoid duplicate symbols. *e.g.* `\footnote[num]{your text}`. The corresponding author * counts as footnote 1, ESI as footnote 2, *e.g.* if there is no ESI, please start at [num]=[2], if ESI is cited in the title please start at [num]=[3] *etc.* Please also cite the ESI within the main body of the text using †.

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† Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/b000000x/

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§ Footnotes should appear here. These might include comments relevant to but not central to the matter under discussion, limited experimental and spectral data, and crystallographic data.

Fig. 2 An image from the *Physical Chemistry Chemical Physics* cover gallery, set as a two-column figure.

Table 2 An example of a caption to accompany a table – table captions do not end in a full point

Header one	Header two	Header three	Header four	Header five	Header six	Header seven
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21

3 Conclusions

The conclusions section should come at the end of article. For the reference section, the style file `rsc.bst` can be used to generate the correct reference style.

References

1 A. Abarca, P. Gómez-Sal, A. Martín, M. Mena, J. M. Poblet and C. Yélamos, *Inorg. Chem.*, 2000, **39**, 642–651.

2 C. D. Abernethy, G. M. Codd, M. D. Spicer and M. K. Taylor, *J. Am. Chem. Soc.*, 2003, **125**, 1128–1129.

3 F. A. Cotton, G. Wilkinson, C. A. Murillio and M. Bochmann, *Advanced Inorganic Chemistry*, Wiley, Chichester, 6th edn, 1999.

4 A. J. Arduengo, III, H. V. R. Dias, R. L. Harlow and M. Kline, *J. Am. Chem. Soc.*, 1992, **114**, 5530–5534.

5 L. N. Appelhans, D. Zuccaccia, A. Kovacevic, A. R. Chianese, J. R. Miecznikowski, A. Macchioni, E. Clot, O. Eisenstein and R. H. Crabtree, *J. Am. Chem. Soc.*, 2005, **127**, 16299–16311.