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## A brief guide to polymerization terminology (IUPAC Technical Report)

**Christine K. Luscombe, *et al.***
*Pure and Applied Chemistry*, 2022
Vol. 94, no. 9, pp. 1079-1084
https://doi.org/10.1515/pac-2021-0115

The use of self-consistent terminology to describe polymerizations is important for litigation, patents, research and education. Imprecision in these areas can be both costly and confusing. To address this situation, IUPAC has made recommendations, which are summarized in this technical report. In the version shown as the supplementary material, references and hyperlinks lead to source documents; screen tips contain definitions published in IUPAC recommendations. More details can also be found in the IUPAC Purple Book. This guide is one of a series on terminology and nomenclature. Refer to the supplementary material for the complete and interactive version of this brief guide. This 2-page version is reprint at the end of this issue.

**https://iupac.org/project/2015-013-1-400/**

## IUGS–IUPAC recommendations and status reports on the half-lives of $^{87}$Rb, $^{146}$Sm, $^{147}$Sm, $^{234}$U, $^{235}$U, and $^{238}$U (IUPAC Technical Report)

**Igor M. Villa, *et al.***
*Pure and Applied Chemistry*, 2022
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https://doi.org/10.1515/pac-2021-1202

The Task Group "Isotopes in Geosciences" (TGIG) was jointly established by IUPAC and the International Union of Geological Sciences (IUGS) to recommend consensus half-life values for the long-lived radioactive nuclides that are used in geochronology. So far, it has evaluated the published measurement results for the decay constant and half-life of $^{87}$Rb, $^{146}$Sm, $^{147}$Sm, $^{234}$U, $^{235}$U, and $^{238}$U. The detailed argumentations of each evaluation, and an extensive reference list, are presented by Villa *et al.* in three manuscripts published in *Geochem. Cosmochim. Acta* in 2015, 2106, and 2022, and widely disseminated in the geochemical and cosmochemical community. The present Technical Report is a summary, explaining the procedures applied in the evaluations.

**https://iupac.org/project/2012-036-2-200/**

## Terminology for chain polymerization (IUPAC Recommendations 2021)

**Christopher M. Fellows, *et al.***
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Chain polymerizations are defined as chain reactions where the propagation steps occur by reaction between monomer(s) and active site(s) on the polymer chains with regeneration of the active site(s) at each step. Many forms of chain polymerization can be distinguished according to the mechanism of the propagation step (*e.g.*, cyclopolymerization—when rings are formed, condensative chain polymerization – when propagation is a condensation reaction, group-transfer polymerization, polyinsertion, ring-opening polymerization—when rings are opened), whether they involve a termination step or not (*e.g.*, living polymerization—when termination is absent, reversible-deactivation polymerization), whether a transfer step is involved (*e.g.*, degenerative-transfer polymerization), and the type of chain carrier or active site (*e.g.*, radical, ion, electrophile, nucleophile, coordination complex). The objective of this document is to provide a language for describing chain polymerizations that is both readily understandable and self-consistent, and which covers recent developments in this rapidly evolving field.

**https://iupac.org/project/2010-007-1-400/**

## Pesticide soil microbial toxicity: setting the scene for a new pesticide risk assessment for soil microorganisms (IUPAC Technical Report)

**Dimitrios G. Karpouzas, Zisis Vryzas, and Fabrice Martin-Laurent**
*Pure and Applied Chemistry*, 2022
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Pesticides constitute an integral part of modern agriculture. However, there are still concerns about their effects on non-target organisms. To address this the European Commission has imposed a stringent regulatory scheme for new pesticide compounds. Assessment of the aquatic toxicity of pesticides is based on a range of advanced tests. This does not apply to terrestrial ecosystems, where the toxicity of pesticides on soil microorganisms, is based on an

outdated and crude test (N mineralization). This regulatory gap is reinforced by the recent methodological and standardization advances in soil microbial ecology. The inclusion of such standardized tools in a revised risk assessment scheme will enable the accurate estimation of the toxicity of pesticides on soil microorganisms and on associated ecosystem services. In this review we (i) summarize recent work in the assessment of the soil microbial toxicity of pesticides and point to ammonia-oxidizing microorganisms (AOM) and arbuscular mycorrhizal fungi (AMF) as most relevant bioindicator groups, (ii) identify limitations in the experimental approaches used and propose mitigation solutions, (iii) identify scientific gaps, and (iv) propose a new risk assessment procedure to assess the effects of pesticides on soil microorganisms.

**https://iupac.org/project/2014-032-1-600/**

## Specification of International Chemical Identifier (InChI) QR codes for linking labels on containers of chemical samples to digital resources (IUPAC Recommendations 2021)

**Jeremy G. Frey, Richard M. Hartshorn, and Leah R. McEwen**

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This article discusses the ways of linking physical objects to digital information relevant to chemical entities, specifically those that can be described by the use of the IUPAC International Chemical Identifier (InChI). It makes recommendations on the form of the computer readable components of labels provided for chemicals and materials that are used on product/sample containers and on the associated documentation that is used when transporting these containers (either internally or during export/import). The focus is on specification of the content of the 2D Quick Response bar codes required to describe the molecular content of the containers and link to digital resources to supplement that provided on a physical label. The necessary technical and (possible) business infrastructure necessary to support the use of the InChI and InChIKey for rapid recall of relevant information is considered here and suggestions are made.

**https://iupac.org/project/2015-019-2-800/**