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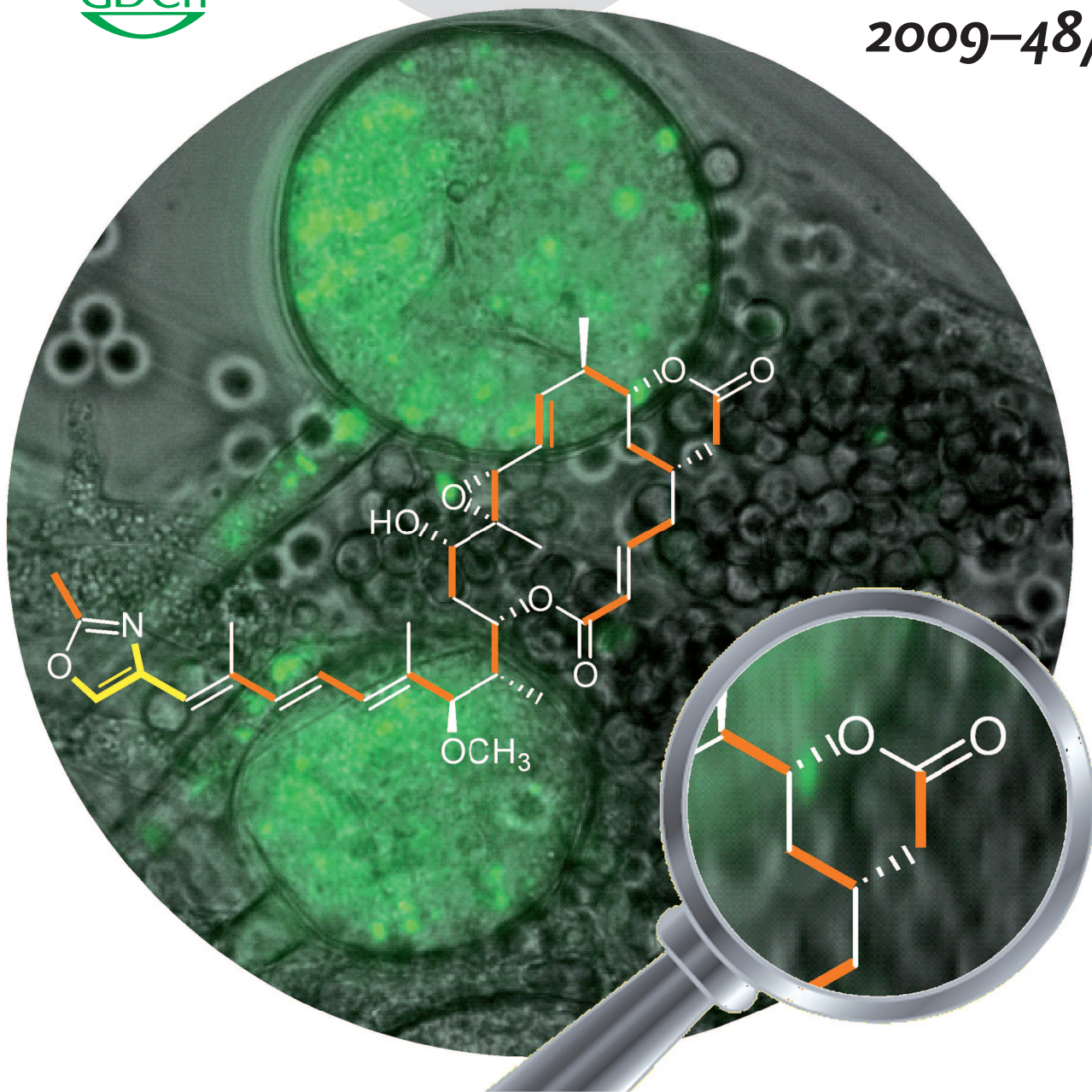
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Heterogeneous Catalysis

B. M. Weckhuysen

Metal-Free Click Reactions

U. S. Schubert et al.

Highlights: C–H Activation • Phosphorus Chemistry • Actinides

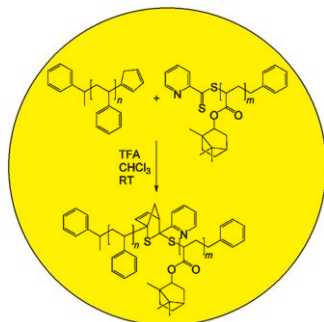
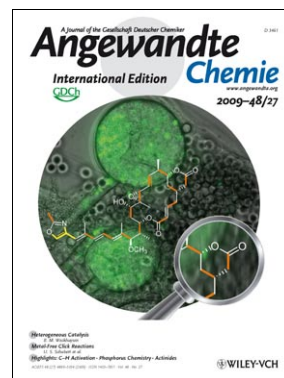
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Cover Picture

Björn Kusebauch, Benjamin Busch, Kirstin Scherlach, Martin Roth, and Christian Hertweck*

*The fungus **Rhizopus microsporus***, shown in the micrograph on the cover picture, harbors the endosymbiotic bacteria *Burkholderia rhizoxinica* that produces the antimitotic polyketide macrolide rhizoxin (see structure). In their Communication on page 5001 ff., C. Hertweck and co-workers show that the enzyme rhizoxin polyketide synthase is uniquely capable of introducing a β branch (highlighted by the magnifying glass) by a Michael-type addition of a malonyl unit to an acryloyl intermediate.

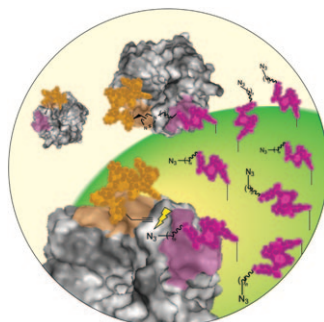
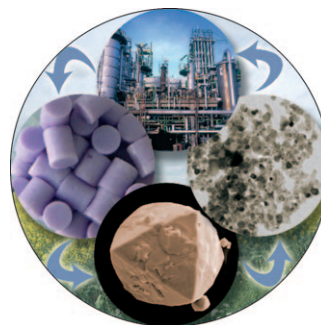


Metal-Free Click Reactions

In the Minireview on page 4900 ff., U. S. Schubert et al. demonstrate how far metal-free click chemistry has developed. Can Michael additions as well as Diels–Alder and thiol–ene reactions match the success of copper-catalyzed cycloadditions.

Heterogeneous Catalysts

A catalyst particle might be assumed to be a mostly homogeneous solid. B. M. Weckhuysen explains that this is not the case in the Review on page 4910 ff. Channels, phase boundaries, and crystallite boundaries determine the diffusion of substrate molecules to the active centers inside the catalyst on the micro- and nanometer scale.



Affinity Agents

A nanomolar protein capture agent against carbonic anhydrase II was assembled using in situ click chemistry and the one-bead one-compound peptide library method, as described by J. R. Heath, K. B. Sharpless, and co-workers in their Communication on page 4944 ff.