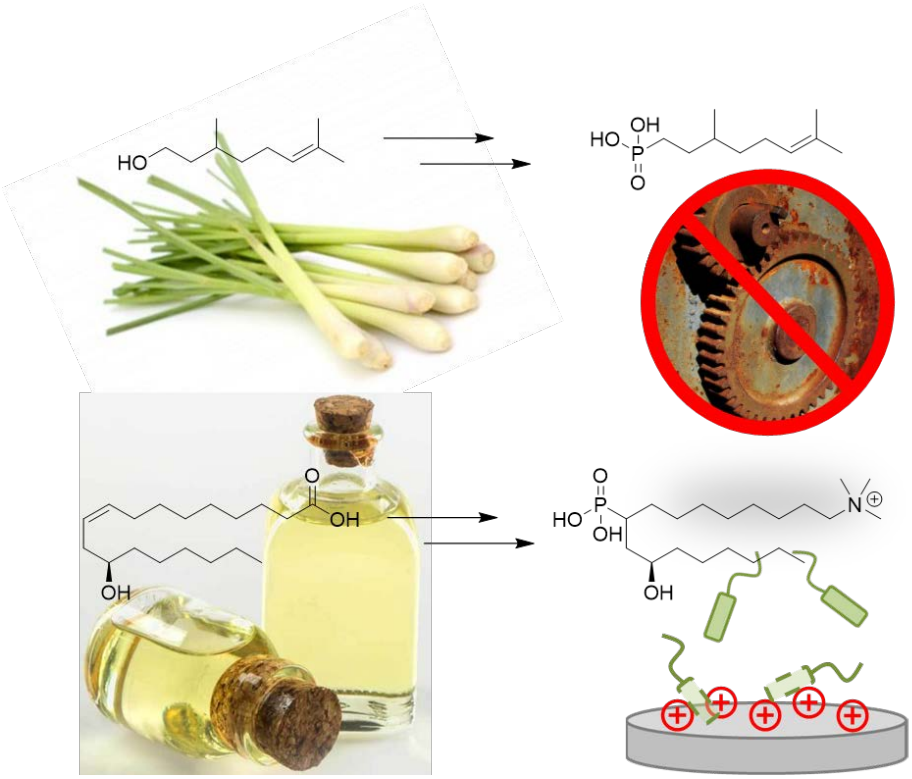
Natural product-derived phosphonic acids as corrosion inhibitors and antifouling agents

E. Ruf, T. Naundorf, W. Maison, University Hamburg, Hamburg,

Phosphonic acids show a high affinity to numerous metals and form stable self-assembled monolayers (SAMs) on metal surfaces.[1] These interactions allow a tailoring of surface properties, making phosphonic acids valuable additives. Consequently, a number of derivatives are already in use for example as corrosion inhibitors of steel, iron or aluminium.[2]

We are presenting the efficient synthesis of various phosphonic acids derived from natural products as renewable and cheap raw-materials. The compounds obtained are a green and cost efficient alternative to substances commonly obtained from petroleum-based precursors. In addition, they are benign-by-design with respect to enzymatic degradability.[3]



We are presenting applications of our new compounds in corrosion inhibition and antifouling on metal surfaces.

[1] Queffélec, C. *et al. Chem. Rev.* **2012**, 112, 7, 3777-3807.

[2] Karthik, B. B.; Selvakumar, P; Thangavelu, C. *Asian J Chem.* **2012**, 24, 3303-3308.

[3] Kümmerer, K. *Green Chem.* **2007**, 9, 8, 899-907.