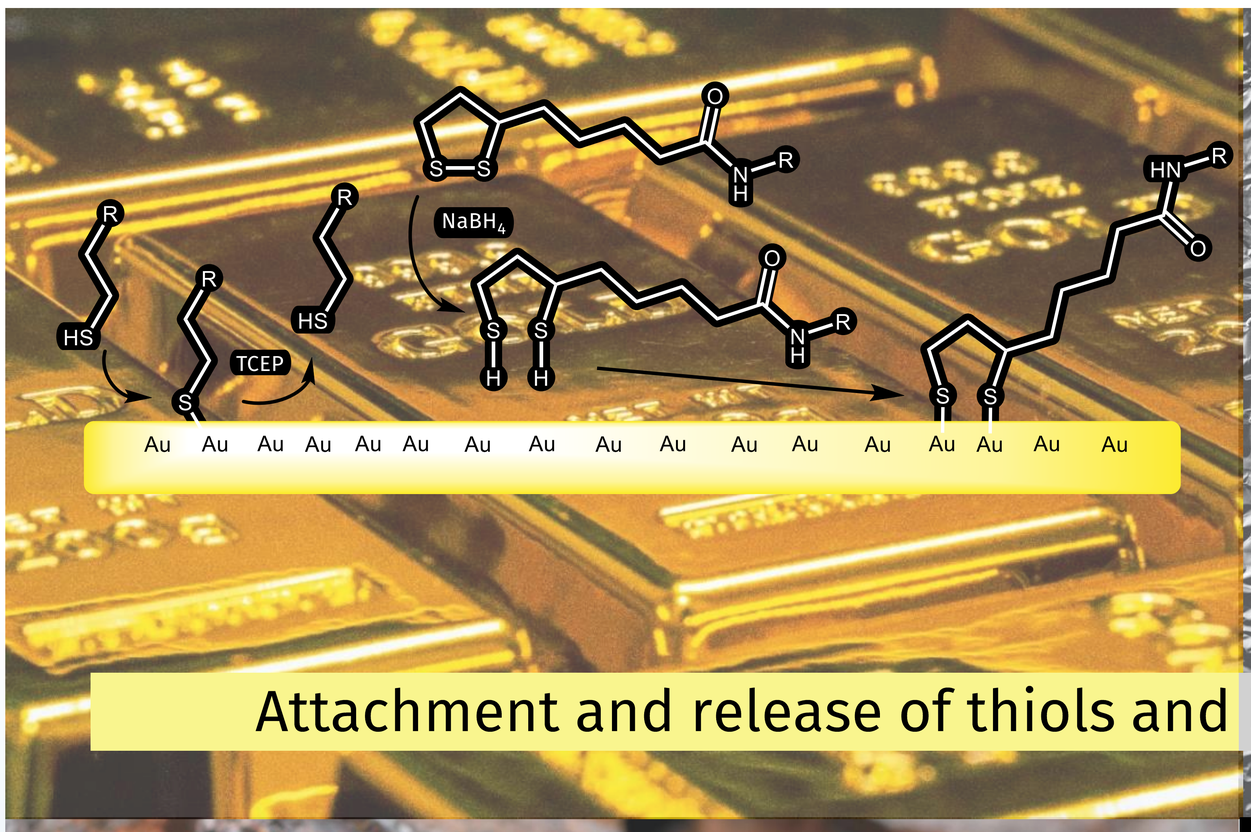
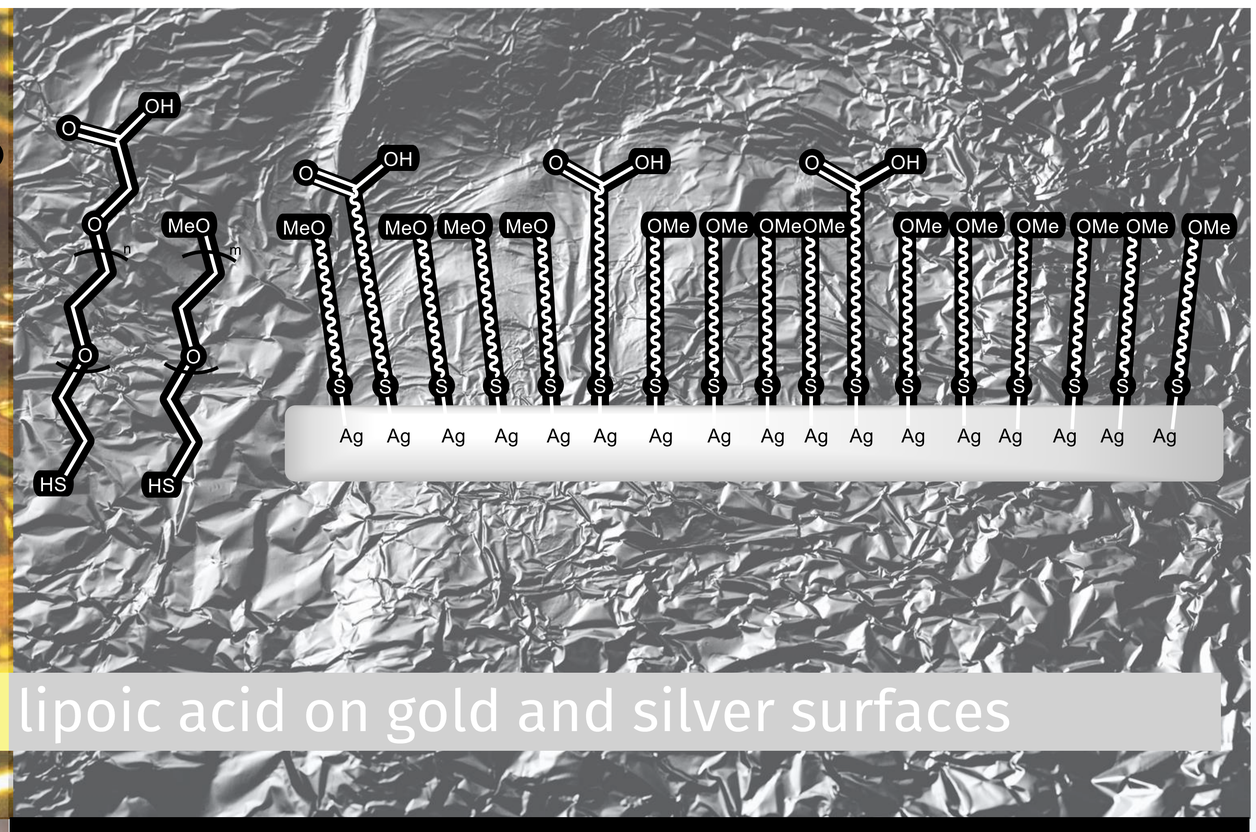
Linkerology®

2023 # 08 – Linker Attachment to Metals, Ores, and Silicate

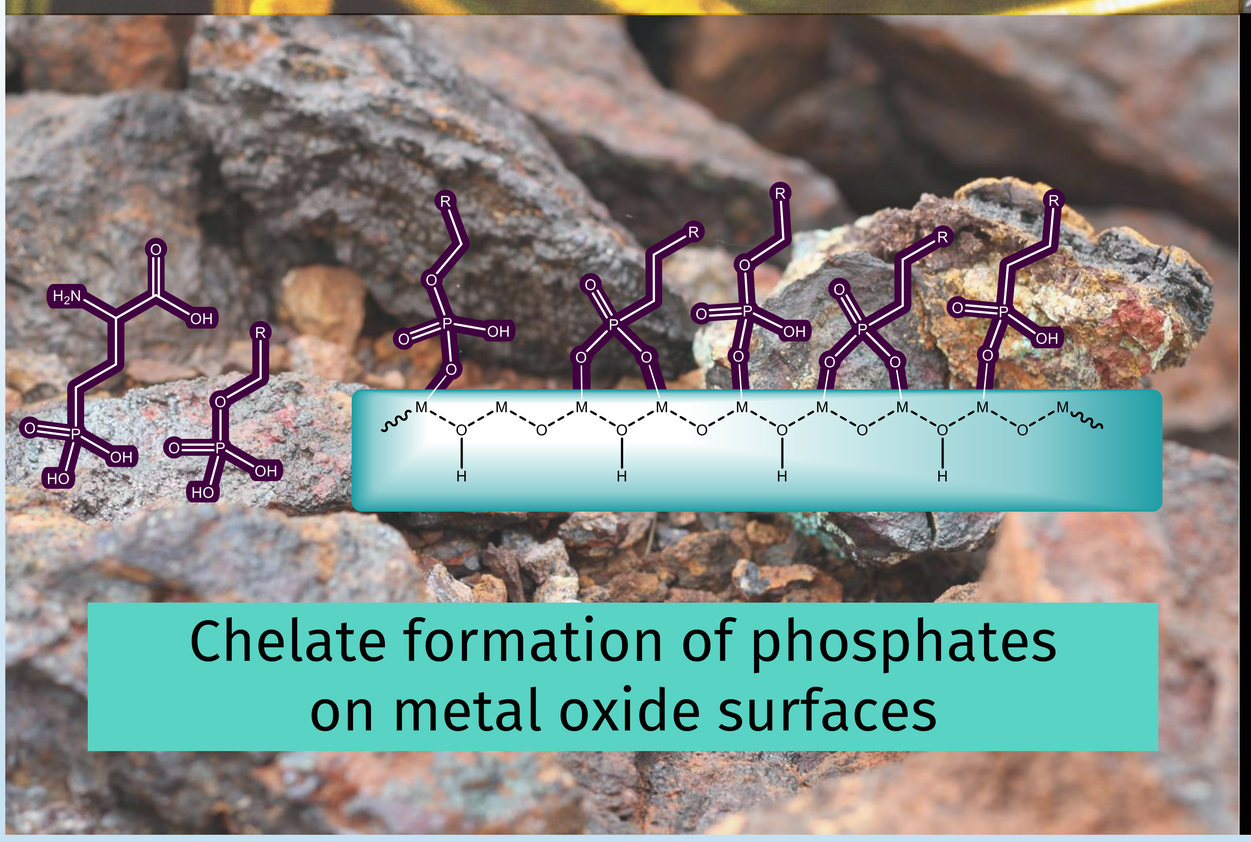
Examples how Metals, Metal Oxids and Silica can be Decorated with (Self-Immolative) Linkers



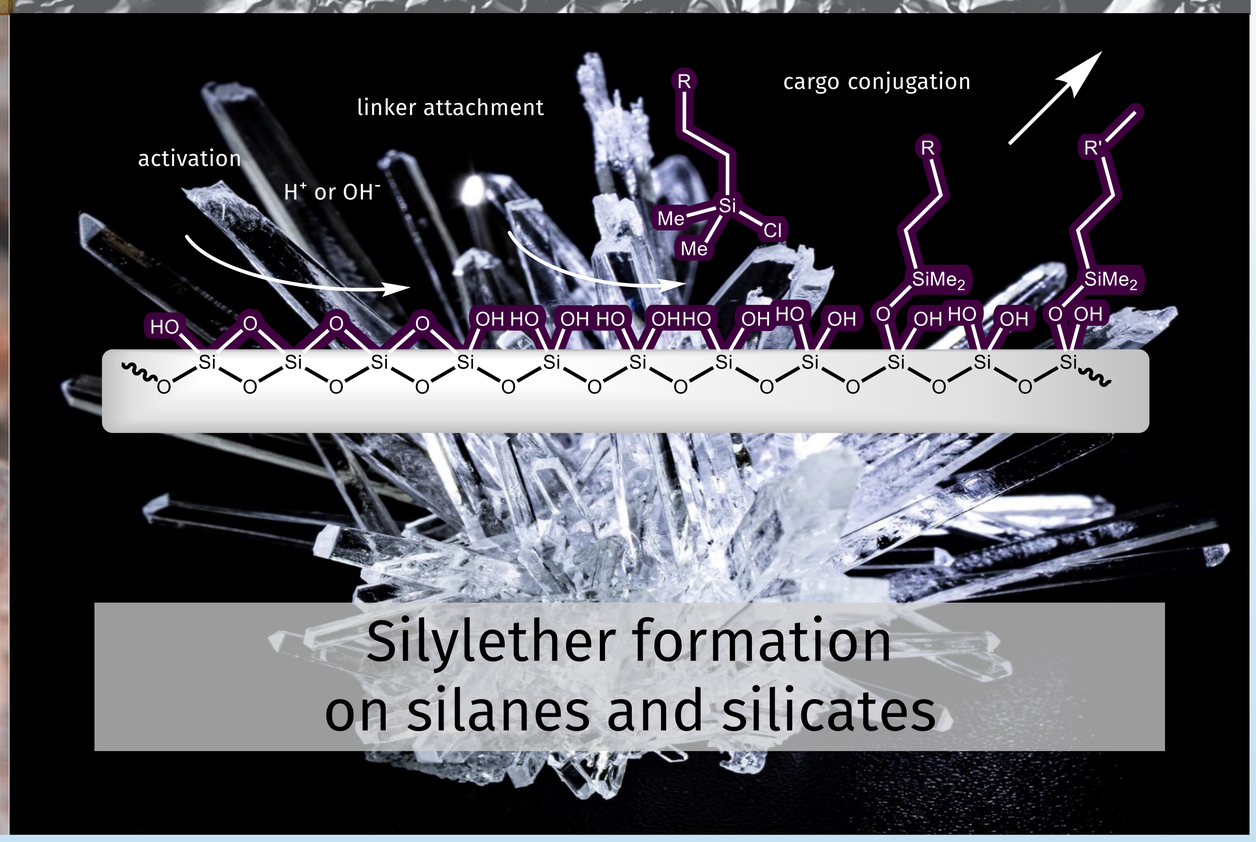
Attachment and release of thiols and



lipoic acid on gold and silver surfaces

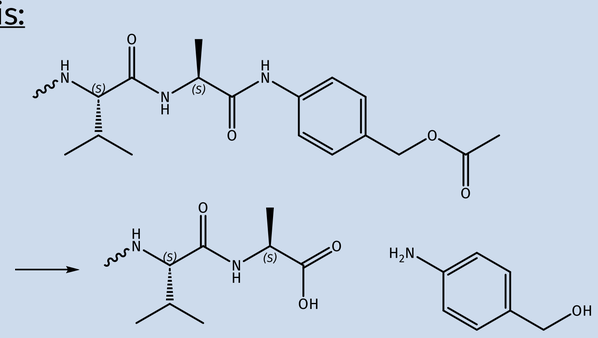
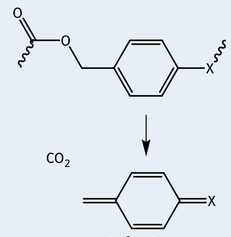
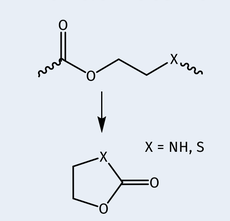
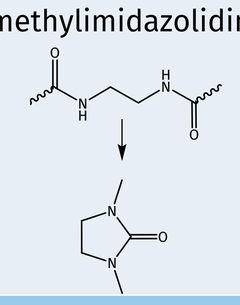
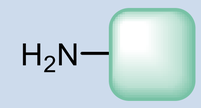
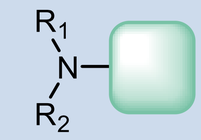
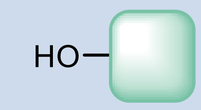
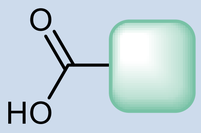
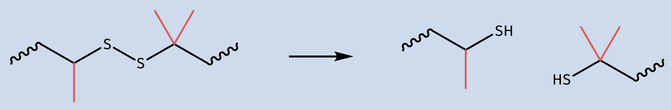


Chelate formation of phosphates
on metal oxide surfaces



Silylether formation
on silanes and silicates

Linkerology® - Conceptual Overview

Carrier	Surface Treatment & Conjugation Chemistry	Cleavage	Fragmentation	Functionality of Natural Product
Metal surface	Affinity of sulfur to gold and silver	Enzymatic hydrolysis: • Val-Ala • Val-Cit • Phe-Lys • Gly-Phe-Leu-Gly • Ala-Leu-Ala-Leu • Cyclobutyl-Ala • Cyclobutyl-Cit • Glucuronic acid 	*p*-Aminobenzyl *p*-Hydroxybenzyl  Oxathiolone  Dimethylimidazolidinone 	Primary & secondary amines  Tertiary amines  Alcohols Phenols  Carboxylic acids 
Metal oxide	Chelat formation			
Silicates	Affinity of silicon and oxygen			
Carbon: • Nanotubes • Fullerenes	Nitrenen addition via photoactivation of perfluoroarylazides			
Plastic polymers: • Teflon • Polyethylene • Polystyrene • Latex	Ammonia or acrylic acid plasma followed by amide bond formation			
Biopolymers: • Peptides • Proteins • Antibodies • Single Chain • Nanobodies • Camelides • Oligonucleotides • Aptamers	Thioether formation with maleimide Disulfide bond formation Acylation of Amines His-Tag acylation Click conjugation (CuCAAC, SPAAC, IEDDA) Enzyme supported conjugation: HaloTag® CLIP-Tag™ SNAP-Tag® Sequence dependent conjugation (Sortase)	Reduction 		

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