

5 cm

5424V 587

Donor	Group	Structure	Component of Humic Substances
O	carboxylate	$\text{R} - \text{C}(\text{O}) - \text{O}^-$	Carboxylic acid
	phenoxide	$\text{Ar} - \text{O}^-$	Phenolic
	alkoxide	$\text{R} - \text{O}^-$	Alcoholic
	carbonyl	$\text{R} - \text{C}(=\text{O}) - \text{R}$	Ketone
N	aliphatic amino	$\text{R} - \text{N}(\text{H})_2$	Amino
	aromatic amino	>N:	Heterocyclic N
S	mercaptide	$\text{R} - \text{S}^-$	Sulphur-containing amino acids and their oxidation products.
	disulfide	$\text{R} - \text{S} - \text{S} - \text{R}$	
	organic polysulfide	$\text{R} - \text{S} - \text{S}_n^2 - \text{R}$	

EXAMPLES OF ORGANIC LIGANDS LIKELY TO CONTRIBUTE TO METAL BINDING IN HUMIC SUBSTANCES

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