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Polyoxometalates in solution: speciation under spotlight

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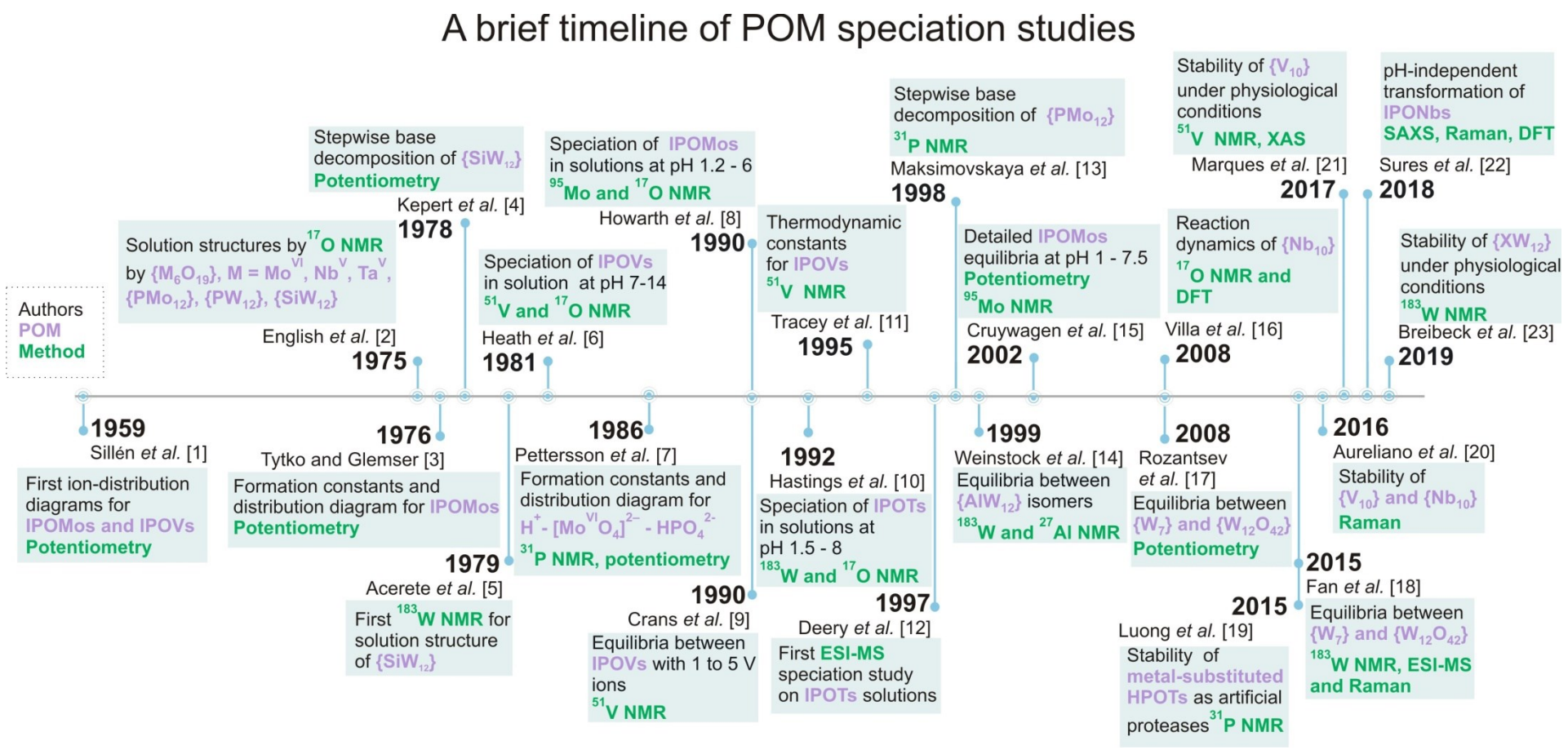

Figure S1. A brief timeline of POM speciation in aqueous media highlighting the first and the most important studies [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23]. For the timeline, investigation, which, in the author's opinion, gave impetus to the further development of the POM speciation chemistry, are highlited. The names of the first authors are shown in black, the investigated POM class or the exact compounds in purple, the method used for investigation in green.

Abbreviation list

AQP3	aquaporin-3
AP	alkaline phosphatase buffer (pH 7.8; NaCl, 5 M; Tris-HCl, 1 M; $MgCl_2$, 1 M)
BHI	brain-heart infusion medium (pH 7.2; calf brain, 12.5 g/L; beef heart, 5 g/L; peptone, 10 g/L; D-glucose, 2 g/L; NaCl, 5 g/L; Na_2HPO_4, 2.5 g/L)
BNPP	bis(p-nitrophenyl)phosphate
DES	diethylsulphate
DFT	density-functional theory
DLS	dynamic light scattering
DMEM	Dulbecco's modified Eagle's medium (pH 7; $CaCl_2$, 0.2 g/L; KCl, 0.4 g/L; NaCl, 6.4 g/L; Na_2HPO_4, 0.109 g/L; Na_2CO_3, 3.7 g/L; glucose, 1 g/L, and 20 proteinogenic amino acids)
EGTA	ethylene glycol-bis(β-aminoethyl ether)-N,N,N',N'-tetraacetic acid
ESI-MS	electrospray-ionization mass-spectrometry
EXAFS	extended X-ray absorption fine structure
HEPES	4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid
HPOMo	heteropolymolybdate
HPOT	heteropolytungstate
HPOV	heteropolyoxovanadate
HT	hydrothermal synthesis
IPOMo	isopolymolybdate
IPONb	isopolyniobate
IPOT	isopolytungstate
IPOTa	isopolytantalate
IPOV	isopolyoxovanadate
ITC	isothermal titration calorimetry
LB	Luria–Bertani medium (pH 7.4; tryptone, 10 g/L; yeast extract, 5 g/L; NaCl, 10 g/L)
MIC	minimum inhibitory concentrations
MRB	mitochondrial respiration buffer (pH 7.4; sucrose, 0.2 M; KH2PO4, 5 mM; KCl, 10 mM; MgCl2, 5 mM; Tris–HCl, 10 mM; pyruvate 5 mM; malate, 0.5 mM)
M. smeg	*Mycobacterium smegmatis*
M. tb	*Mycobacterium tuberculosis*
NA	natural abundance
NMR	nuclear magnetic resonance
POM	polyoxometalate
POMo	polyoxomolybdate
PONb	polyoxoniobate
POT	polyoxotungstate
POTa	polyoxotantalate
POV	polyoxovanadate
RNase A	bovine pancreatic ribonuclease A
SAXS	small-angle X-ray scattering
SIM	Schneider's insect medium (pH 5.4; Na_2HPO_4, 0.7 g/L; $MgSO_4$, 3.7 g/L; KCl, 1.6 g/L; KH_2PO_4, 0.45 g/L; NaCl, 2.1 g/L and 20 proteinogenic amino acids)
XANES	X-ray absorption near edge structure
XAS	X-ray absorption spectroscopy
Z	acidity or degree of protonation (the average number of protons bound to monomeric oxo-metalate in solution)

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