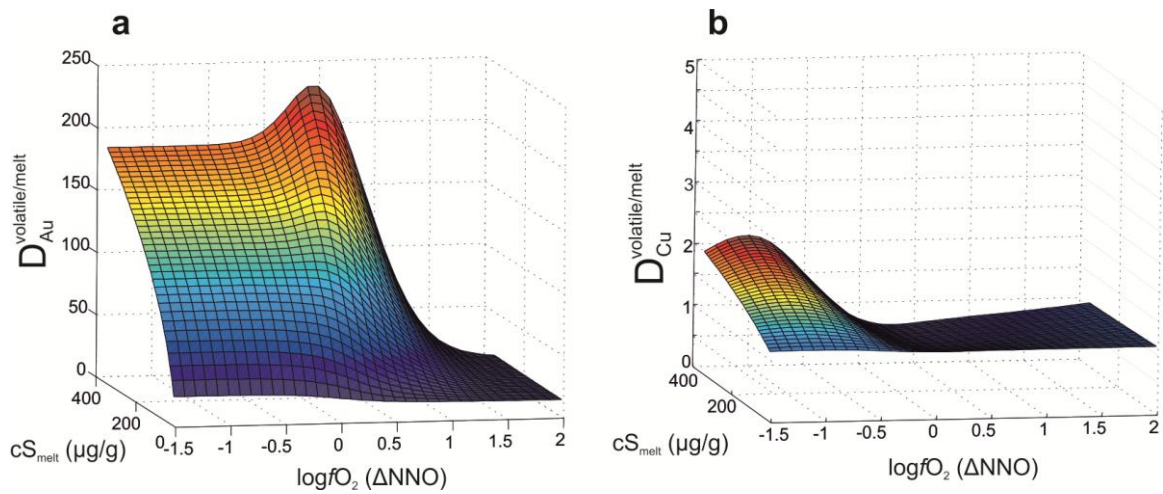**Fig. 1.** Geometries of some important gold complexes in magmatic volatiles calculated using hybrid density functional theory [PBE1PBE/SDD(Au, Rb) or 6-311++G(d,p)(H, S, Cl, K)].

Fig. 2. Model volatile/andesite melt partition coefficients of Au and Cu at a 1000 ^{o}C and 200 MPa.