

Cation- π interaction is dictated by flanking lysine in underwater adhesion

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Cation- π interaction is one of the electrostatic interaction, and have been acquired intensive attention in underwater adhesion. Usually, every electrostatic interactions are diminished dramatically in water due to its high dielectric constant. However, in case of cation- π interaction, it is less affected by water and considered as a key interaction in underwater adhesion. Cation- π interaction needs cation sources and π sources to form interactions. Lys, Arg, and His can be the candidate for the cation sources for protein system and Tyr, Phe, and Trp can be the candidate for the anion sources for protein system. In this study, we characterized flanking Lys effect in cation- π interaction using surface forces apparatus, resonance Raman spectroscopy, and ab initio calculation using density functional theory. We expect that this study could give insight not only in understanding cation- π interaction itself, but also to its application in biomedical fields.