

ENHANCEMENT FEATURES OF INFRA-RED
ABSORPTION BY α -GLY MOLECULES
IN THE SEIRA EFFECT

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S u m m a r y

Molecules of α -Gly are used as an example to demonstrate that the surface enhanced infrared absorption (SEIRA) effect is different for different molecular groups, with the enhancement being maximal for charged groups and groups with an unshared electron pair. The enhancement factor of IR absorption for multilayered films of α -Gly molecules deposited onto a gold substrate decreases, as the number of molecular layers increases, and can become 2 to 7 times lower for various molecular groups. It can be made 3 to 12 times higher for films obtained by the thermal sputtering of α -Gly molecules in vacuum onto a gold surface in comparison with the films deposited from an aqueous solution. If α -Gly and gold are sputtered simultaneously, a better resolution of the IR absorption bands of glycine is observed. It is shown that a decrease of the solution pH index to 2 gives rise to an increase of the enhancement factor of IR absorption by α -Gly by an order of magnitude, which allowed us to register overtones in thin films of glycine (250–275 nm in thickness).