

SELF-ORGANIZATION OF HEXADECYL BORON
ACID MOLECULES ON ATOMICALLY FLAT
SURFACE OF GRAPHITE

*A.I. Senenko*¹, *A.A. Marchenko*¹, *A.G. Naumovets*¹,
*D.T. Taraschenko*¹, *D.A. Glubokov*^{1,2}, *Ya.Z. Voloshin*³,
*A.A. Varzatskiy*⁴, *A.L. Kapitanchuk*⁵

¹Institute of Physics, Nat. Acad. of Sci. of Ukraine
(46, Nauky Prosp., Kyiv 03028, Ukraine),

²Lebedev Physical Institute, Russian Acad. of Sci.
(53, Leninskii Prosp., Moscow 11999, Russia),

³Nesmeyanov Institute of Organoelement Compounds,
Russian Acad. of Sci.
(28, Vavilova Str., Moscow 119991, Russia),

⁴Vernadsky Institute of General and Inorganic
Chemistry, Nat. Acad. of Sci. of Ukraine
(32/34, Academician Palladin Prosp.,
Kyiv 03142, Ukraine),

⁵Bogolyubov Institute for Theoretical Physics,
Nat. Acad. of Sci. of Ukraine
(14-b, Metrolohichna Str., Kyiv 03680, Ukraine)

S u m m a r y

It has been shown that highly ordered monolayer films of hexadecyl boron acid $\text{CH}_3\text{-(CH}_2\text{)}_{15}\text{-B(OH)}_2$ can be obtained on the basal plane of highly oriented pyrolytic graphite by the deposition from a solution of the acid in *n*-tetradecane *n*-C₁₄H₃₀. Using the scanning tunneling microscopy, it has been found that the ordered monolayers have a lamella-like structure. In this structure, each lamella is composed of pairs (dimers) of molecules of the acid. The association of molecules in each pair is implemented through the interaction between B(OH)₂-groups. It has been also found that molecules of solvent *n*-C₁₄H₃₀, being at a temperature sufficiently higher than the surface crystallization temperature can be coadsorbed with molecules of the acid. The coadsorption is explained by the geometric factor due to a specific size of the dimers of hexadecyl boron acid.