



**Ukrainian Conference
with International Participation**

**CHEMISTRY, PHYSICS
AND
TECHNOLOGY OF SURFACE**

**29-30 May 2024
Kyiv
Ukraine**



Chuiko Institute of Surface Chemistry
of National Academy of Sciences of Ukraine
Scientific Council

“Chemistry and Technology of Surface Modification”
Interbranch Scientific and Technical Complex “Surface Chemistry”

Ukrainian Conference with International Participation
**“CHEMISTRY, PHYSICS AND
TECHNOLOGY OF SURFACE”**

Book of abstracts

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Тези доповідей Всеукраїнської конференції з міжнародною участю “Хімія, фізика і технологія поверхні” – Київ, 2024. – 222 с.

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Збірник містить тези доповідей, які було представлено на конференції. Тематика конференції: теорія хімічної будови та реакційна здатність поверхні твердих тіл; фізико-хімія поверхневих та міжфазних явищ; хімія, фізика та технологія наноматеріалів; медико-біологічні та біохімічні аспекти вивчення наноматеріалів. Тези доповідей подано в авторській редакції.

The Book contains abstracts of the Conference presentations. The Conference topics: theory of chemical structure and reactivity of solid surfaces; physical chemistry of surface and interfacial phenomena; chemistry, physics and technology of nanomaterials; medical, biological and biochemical aspects of investigation of nanomaterials. The abstracts are published in the author's edition.

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Binary functional composites on the base of clays and plants for delivering biologically active substances on the surface of the skin

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Immobilization is a set of techniques that limit partially or completely the possibility of movement by binding to the carrier molecules, substances, or biological materials. Composites are excellent materials for use of this phenomenon in practice. Immobilizing new bioactive forms is crucial for modern pharmacology and cosmetics.

Using specific media can create medicinal forms with improved solubility in biological fluids, controlled release into the body, high stability during storage, and other desirable properties. Clays, which are naturally occurring micro and nanostructured materials, are potential inorganic ingredients. This makes it possible to obtain nanostructured composites based on clay with specific additives and allows to control such practically important features as morphological, structural, textural, mechanical, abrasive, thermal, and other complex materials. Clays are easily mixed with other nanostructured micromaterials, including silicas, diatomites, hydroxyapatites, powdered metals, bioactive (for example, natural) materials used in medicine and cosmetics etc.

By changing the composition and structure of such composite materials, it is possible to provide the necessary carrying capacity and regulate the kinetics of the release of the active substance. Nanostructured solids play an important role that strongly affects properties of composites and natural bioactive materials. You can expect synergistic effect on the properties of nanostructured hybrid composites as a result of interference of components and changes in morphological and other properties over time preparation and processing of the composite. Composite materials were developed based on white or yellow clay and raw materials of such plants as *Ocimum basilicum*, *Salvia officinalis*, *Lavandula angustifolia*, *Melissa officinalis*, *Origanum vulgare*, *Thymus vulgaris*, *Mentha piperita*, *Ocimum basilicum* var. Purple, *Chamomilla recutita*, *Calendula officinalis*, *Helichrysum arenarium*. The influence of the addition of composite materials on the shelf life of cosmetics was studied.