

EFFECT OF STRUCTURE FORMATION UNDER THE INFLUENCE OF HOMOGENEOUS SYSTEMS IN MIDWIFE SANDS

Ахмаджонов И.Л.

старший преподаватель кафедры химии,
доктор химических наук (PhD) КГПИ,

Ганибоева Х. Ш.

магистр КГПИ

ABSTRACT

Under the influence of the composition of lime and surfactant additives in the sand dispersion, physicochemical processes occur, leading to a change in the morphology of particles and dispersed hardening and, as a result, to the formation of strong aggregates.

The possibility of forming a water-resistant structure in a salty sand dispersion using complex reagents combining finely dispersed mineral lime and surfactants, providing the effect of dispersion hardening, has been revealed.

Keywords: disperse, surfactant, sand, water-resistant structure, soil, liquid glass.

INTRODUCTIONS

The development of water-soluble polymers that form a strong structure in mobile sand soils is important to prevent dust storms from rising into the atmosphere due to wind erosion and consequent environmental damage. Thus, the creation of new binders for structure formation in sand and soil dispersions on the basis of cheap industrial waste and the study of their properties is one of the urgent tasks of colloidal chemistry [1].

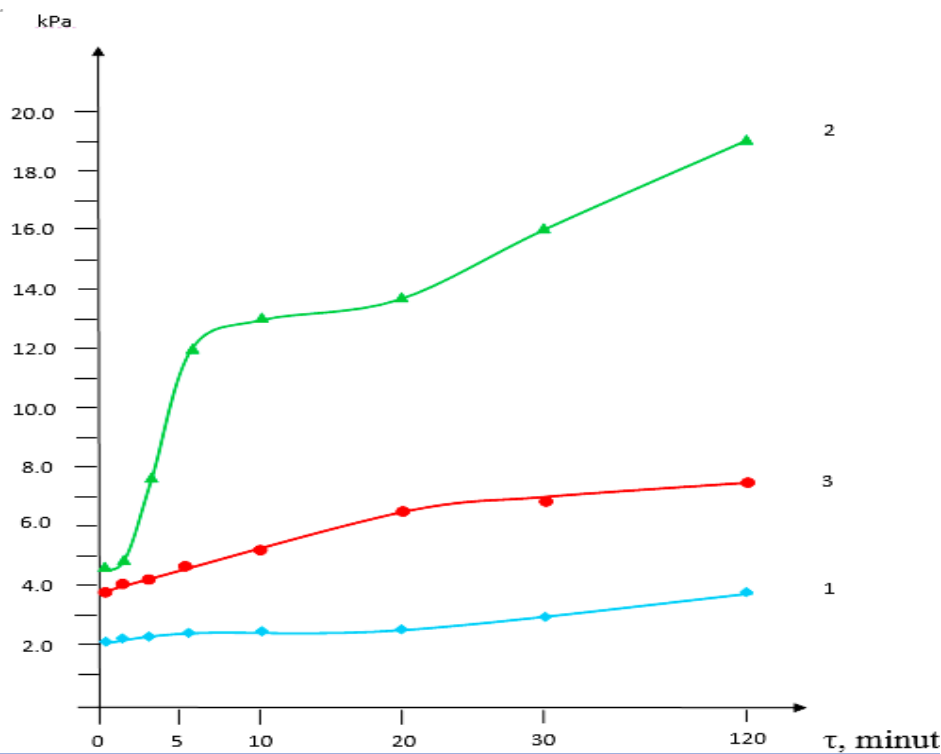
For this purpose, research work was carried out on sand samples brought from the Moynak district, with different concentrations of the currently used liquid glass solution.

Experimental part: A change in the concentration of liquid glass in the solution strongly affects the processes of sand consolidation. For example, a 4% decrease in the concentration of liquid acid in a solution leads to a 51% decrease in plastic strength during spraying, but according to the results of daily monitoring of the casing, it is characterized by an increase in plastic strength values (66% more). The depth of immersion of the cone when immersed in the same volumes is characterized by relatively similar values. However, under the influence of the external environment, the shell in the sample with 4 ml of solution is easily destroyed. After the samples have completely dried (more than 10 days), the thickness of the shells has different values.

The saturation coefficients of sand (K) under the influence of LS solutions are also characterized by the difference between the actual immersion depth and its values, and these differences become greater with the increase in the concentration of LS in the solution. For example, the process of free soaking of sand with different concentrations of 2- and 10% solutions shows that the particles of LS are related to the surface of the sand and the porosity of the system [2].

As the concentration of LC increases, the differences between the calculated and actual dive depths increase. The obtained data on the change in the saturation coefficient ($K > 1$) show clogging of the channels due to the formation of a silica gel film, while the sand exceeds the

saturation limit and part of the liquid remains on the surface of the system. The highest K values are achieved at the consumption of 10% of the LS solution. A drop of 10 mL or more in the volume of the fluid injected into the moving sand will cause a change in volume, possibly because the rest of the fluid will be forced to move to the bottom of the system due to the rupture of the pressurized film.



Change in plastic strength under the action of soaking 8 ml of liquid in 50 g of sand: 1) 8 ml; 2) 6ml; 3) 4 ml.

The curves of changes in the plastic strength of sand impregnated with a 4% solution of ZhS, corresponding to the period of structure formation, are characterized by a short horizontal line. An 8% increase in concentration results in a change in this area to 1-day values. The curves of changes in the strength of sands have approximately the same shape, but the length of the first one differs, which characterizes the formation of a structural system.

Relatively high strength results were obtained when the bottle of liquid was partially replaced with a 20% distillate solution by weight. The obtained results confirm the positive effect of calcium and chlorine compounds on the hardening processes of mobile sand impregnated with ZhS solutions. An increase in the amount of distillate liquid up to 50% compared to a liquid glass solution can lead to a decrease in the saturation coefficient of sands with a simultaneous decrease in the strength of the formed shell, which can lead to a decrease in the rate of formation of the crystallization structure in sands impregnated with sodium silicate [3].

Conclusion: In order to study the properties of gravitational forces, mechanical compression of sand and the interaction of strengthening reagents with the surface of sand particles, a series of experiments was carried out on sand samples brought from the Muynok region, such as immersion of liquid in sand, cone settling depth, determination of the plastic strength of sand. Analysis of the kinetics of the bonding processes using various reagents and changes in the plastic strength of sands showed that the conditions for the entry of the binder depend on the

type of substance and the distribution of the sand, with the formation of free flow into the cavity under the action of gravitational or capillary forces.

REFERENCES

1. [1]. Nechaev, A.I. Investigation of radical polymerization and structure of anti-turbulent terpolymers based on acrylamide, acrylonitrile and 2- acrylamide-2-methylpropanesulfonic acid / A.I. Nechaev, M.N. Gorbunova, I.I. Lebedeva et al. // Journal. prikl. chemistry - 2017. - Vol. 90. - No. 9- - 1234-1242 p.
2. [2]. Strel'nikov, V.N. Development of acrylate copolymers with increased acid, salt and heat resistance as a basis for import-substituting drilling lubricants / V.N. Strel'nikov, V.A. Valcifer, A.I. Nechaev // Collection of theses of the XX Mendeleev Congress on General and Applied Chemistry. - Yekaterinburg, 2016. - Vol. 3. - 283 p.
3. [3]. Nechaev, A.I. Investigations in Acrylate Polymer Composition, in its Structure and DragReducing Properties under Conditions of High Temperatures and Highly Mineralized Aqueous Media / A.I. Nechaev, V.A. Valtsifer and V.N. Strel'nikov. // The optimization of the composition, structure and properties of metals, oxides, composites, nano and amorphous materials. Proceedings of the sixteenth Israeli – Russian Bi-National Workshop. –Israel, Ariel, 2017.– 91 p.
4. [4]. Fundamentals of analytical chemistry / edited by Yu. A. Zolotov. - 3rd, pererab. and additional - M.: Higher School, 2004. - Vol. 2. - 503 p.
5. [5]. GOST 11034-82 polyamides. Method for determining the number of viscosity of dilute solutions.
6. [6]. A.I. Sharipova., I.L. Akhmadjonov., A.B. Abdikamalova., Kh.I. Akbarov., Sh.A. Kuldasheva Synthesis of New Fixings of Mobile Sands (2021). Alinteri Journal of Agriculture Sciences 36(1): 356-361
7. [7] Feruz Tukhtaev, Dilorom Karimova, Dilnavoz Kamalova. Research of Kinetic Sorption of Pb²⁺ Ions in Pb(NO₃)₂ Solution by Composite Polymeric Sorbents Under Various Conditions //International Journal of Advanced Research in Science, Engineering and Technology. Vol. 7, Issue 6, June. 2020. pp 14036-14043.
8. [8]. Feruz Tukhtayev, Iroda DJalilova, Nargiza Shonazarova. Development of Sorption Technology of Composition Polymer Sorbents // International Journal of Advanced Research in Science, Engineering and Technology. Vol. 7, Issue 10 , October 2020. pp. 15414-15417
9. [9]. Feruz Tukhtaev, Dilorom Karimova, Ayzada Malikova, Dilnavoz Kamalova. Research Of Kinetic Sorption Of Cu²⁺ Ions In CuSO₄ Solution By Composite Polymeric Sorbents Under Various Conditions // Journal of Advanced Research in Dynamical & Control Systems, DOI: 10.5373/JARDCS/V12SP6/SP20201058. Vol.12, Special Issue-06, 2020. pp. 505-511.
10. Adizova N.Z., Kuldasheva Sh.A., Ashmetov I.D., Akhmadzhonov I.L. Study the influence of windway air flow on erosion of fixed soils and sands of the aral //Uzbek chemical journal. - 2019, -№ 2. S. 29-35 (02.00.00, No6).
11. Adizova N.Z., Kuldasheva Sh.A., Ahmadjonov I.L., Eshmetov I.D., Akbarov Kh.I. Fixing mobile desert sands: definition of water resistance, mechanical strength and mechanism of fixing //Bulletin of National University of Uzbekistan: Mathematics and Natural Sciences: Vol. 3: Iss. 1, Article 9 (02.00.00, №12).
12. Kuldasheva Sh.A., Ahmadjonov I.L., Adizova N.Z., Abdulkhaev T.D. Efficiency of Fixing Mobile Sands for Solving some Ecological Problems of Desert Zones of Surkhandarya // Solid State Technology, Volume: 63 Issue: 4, P-374-380. ((40) Researchgate).

13. Адизова Н.З., Ахмаджонов И.Л., Усмонова А.Г., Кулдашева Ш.А. Чўл худудларида кўчма тупроқ ва қумларни мустақамлашнинг муҳим параметрлари ва уларни ўрганишнинг аҳамияти //“Фан ва технологиялар тараққиёти” илмий-техникавий журнал, 2020.- №3.- 223-231 бетлар (02.00.00, №14).
14. I.L.Akhmadjonov, A.I.Sharipova., A.B. Abdikamalova., Kh.I. Akbarov., Sh.A. Kuldasheva Synthesis of new polimers for Fixings of Mobile Sands Alinteri Journal of Agriculture Sciences 36(1) (2021).: P 356-361. DOI:10.47059/alinteri/V36I1/AJAS 21053 ((1)Web of Science).
15. Akhmadzhanov I.L., Adizova N.Z., Kuldasheva Sh.A., Fixing of mobile sands of the desert regions of Surkhandarya with the help of salt-resistant compositions // Collection of scientific articles based on the results of the work of the Interuniversity Scientific Congress Higher School: Scientific Research Moscow, -2020. - P.101-106.
16. Kuldasheva Sh.A., Akhmadzhonov I.L., Adizova N.Z., Suvanov Sh.D., Rashidov A.A. Mechanism of Structure Formation of Chemical Fixation of Mobile Sands by Complex Additives. Proceedings of the Republican Scientific - Akhmadzhonov I.L., Technical Conference. (25-26 April) Tashkent. – 2019. P. 147-149.
17. Адизова Н.З., Кулдашева Ш.А., Акмалова А.Г., Суванов Ш.Д., Рашидов А.А. Орол Сурхандарё кучма тупроқ ва қумлари минерологик, кимёвий ва дисперс таркиблари хусусияти // XXI аср интеллектуал ёшлар асри мавзусидаги республика илмий-амалий конференцияси (29-март) -2019. 107-109 бетлар.
18. Ahmadzhonov I.L., Adizova N.Z., Kuldasheva Sh.A., Suvanov Sh.D., Rashidov A.A., Kazbekov R. Influence of wind flow of air on erosion of fixed ground and sand of the aral sea // Collection of materials of the 5th International Scientific and Practical Conference "Actual Problems of Implementation of Innovative Equipment and Technologies at Enterprises for the Production of Building Materials, Chemical Industry and in Related Industries" (May 24-25) Fergana. – 2019. - P. 283-285.
19. Адизова Н.З., Ахмаджонов И.Л., Кулдашева Ш.А. Экологические проблемы по закреплению подвижных песков арала //«Қорақалпоғистон республикасида кимё, кимёвий технология, нефт-газ ва енгил саноат соҳалари ривожининг долзарб муаммолари» мавзусидаги республика илмий-амалий конференцияси, Нукус (24-май) - 2019. - С. 74-76.
20. Ахмаджонов И.Л., Адизова Н.З., Кулдашева Ш.А., Investigation of the effect of the wind air flow on the mechanical strength of the fixed Aral sands // XXI Менделеевский съезд по общей и прикладной химии, Том-3, 2020. - С. 293.
21. Akhmadzhonov I., Adizova N.Z., Kuldasheva Sh.A., Akmalova A. Interaction of meliorants-fixers with particles of desert sand // Proceedings of the international scientific and practical Internet conference "Trends and prospects for the development of science and education in the context of globalization", September 28, 2019, Vyp. 51, pp. 294-297.
22. Ахмаджонов И.Л., Адизова Н.З., Адизов Б.З., Пайғамов Р.А., Кулдашева Ш.А. Орол бўйи кўчма қумларини сув ва бензол буғи билан адсорбцияси // Республика илмий анжуман материаллари тўплами “Ҳозирги замонда тупроқшунослик ва деҳқончилик муаммолари” (16 октябрь), - 2019. 141-142 бетлар.

23. Akhmadjonov I.L., Adizova N.Z., Kuldasheva Sh.A., Abdikamalova A.B., Eshmetov I.D., Fixing mobile sands from the bottom of the drained Aral Sea with the help of salt-resistant compositions // Proceedings of the I International Uzbek-Kazakh Symposium "Actual Problems of the Development of Chemical Science and Industry", (24-25 October) Tashkent-2019. - P. 192-197.
24. Akhmadzhonov I.L., Adizova N.Z., Kuldasheva Sh.A., Abdikamalova A.B., Eshmetov I.D., Yusupov Zh.S. Issledovanie vliyaniyu stavlennykh additivenykh dlya predstavleniya vetrovoy erosion zasalinnykh peskov [Study of the influence of fixing additives for the prevention of wind erosion of saline sands]. (May 20), Nukus-2020. - p. 84.
25. Ахмаджонов И.Л., Адизова Н.З., Кулдашева Ш.А., Адизов Б.З. The impact of seditonal soil and sand on the choice of structural-sorbsion properties and their reinforcing compositions in desert areas . 16th century B.C.E. Термиз (24-26 апрель) - 2020. -S. 379-381.
26. Akhmadzhanov I.L., Adizova N.S., Abdurahimov S.A., Kuldasheva S.A., Adizov BC Orol bjöyi va Buhoro-Hiva regions kuchma turrocklarini va cumlarini cotirishda olarning sor hussiyatlarini akhamiyati // Innovative technology va technology technology atropha muhof it muhofazasi sohadagi muammo va stikbollari mavzushidagi khalqaro ilmium-technical anjumani ilmium ish. Toshkent (September 17-19) - 2020. - 130-132 page.
27. Axmadjonov I.L., Adizova N.Z., Kuldasheva.Sh.A. The effectiveness of the combined fixing of mobile soil and sands of the dried Aral Sea // International Symposium on Ecological Restoration and Management of the Aral Sea.Virtual symposium. 24-25 November - 2020.