

Andrei Petukhov
Universitair Hoofddocent
Physical Chemistry
E-mail: a.v.petukhov@tue.nl



Onderzoeksoutput

Unravelling three-dimensional adsorption geometries of PbSe nanocrystal monolayers at a liquid-air interface

Geuchies, J. J., Soligno, G., Geraffy, E., Hendrikx, C. P., Overbeek, C. V., Montanarella, F., Slot, M. R., Konovalov, O. V., Petukhov, A. V. & Vanmaekelbergh, D., 1 dec 2020, In : Communications Chemistry. 3, 1, 10 blz., 28.

Scattering from colloidal cubic silica shells: Part I, particle form factors and optical contrast variation

Dekker, F., Kuipers, B. W. M., Petukhov, A. V., Tuinier, R. & Philipse, A. P., 20 nov 2019, In : Journal of Colloid and Interface Science.

Forced to line up for perfect order

Petukhov, A. V., 1 nov 2019, In : Nature Materials. 18, 11, blz. 1151-1152 2 blz.

High-resolution SAXS setup with tuneable resolution in direct and reciprocal space: a new tool to study ordered nanostructures

Chumakov, A. P., Napolskii, K. S., Petukhov, A. V., Snigirev, A. A., Snigireva, I. I., Roslyakov, I. V. & Grigoriev, S. V., 1 okt 2019, In : Journal of Applied Crystallography. 52, blz. 1095-1103 9 blz.

Convectively assembled monolayers of colloidal cubes: evidence of optimal packings

Meijer, J. M., Meester, V., Hagemans, F., Lekkerkerker, H. N. W., Philipse, A. P. & Petukhov, A. V., 9 apr 2019, In : Langmuir. 35, 14, blz. 4946-4955 10 blz.

Wet-chemical synthesis of chiral colloids

Ouhajji, S., van Ravensteijn, B. G. P., Fernández-Rico, C., Lacina, K. S., Philipse, A. P. & Petukhov, A. V., 26 dec 2018, In : ACS Nano. 12, 12, blz. 12089-12095 7 blz.

Unravelling the structural rearrangement of polymer colloidal crystals under dry sintering conditions

Zozulya, A. V., Zaluzhnyy, I. A., Mukharamova, N., Lazarev, S., Meijer, J. M., Kurta, R. P., Shabalin, A., Sprung, M., Petukhov, A. V. & Vartanyants, I. A., 28 jul 2018, In : Soft Matter. 14, 33, blz. 6849-6856 8 blz.

Cuboidal supraparticles self-assembled from cubic CsPbBr₃ perovskite nanocrystals

van der Burgt, J. S., Geuchies, J. J., van der Meer, B., Vanrompay, H., Zanaga, D., Zhang, Y., Albrecht, W., Petukhov, A. V., Fillion, L., Bals, S., Swart, I. & Vanmaekelbergh, D., 12 jul 2018, In : Journal of Physical Chemistry C. 122, 27, blz. 15706-15712 7 blz.

Inward growth by nucleation: Multiscale self-assembly of ordered membranes

Landman, J., Ouhajji, S., Prévost, S., Narayanan, T., Groenewold, J., Philipse, A. P., Kegel, W. K. & Petukhov, A. V., 29 jun 2018, In : Science Advances. 4, 6, eaat1817.

Crystallization of nanocrystals in spherical confinement probed by in Situ X-ray scattering

Montanarella, F., Geuchies, J. J., Dasgupta, T., Prins, P. T., Van Overbeek, C., Dattani, R., Baesjou, P., Dijkstra, M., Petukhov, A. V., Van Blaaderen, A. & Vanmaekelbergh, D., 13 jun 2018, In : Nano Letters. 18, 6, blz. 3675-3681 7 blz.

Study of petrolatum structure: explaining its variable rheological behavior

van Heugten, A. J. P., Landman, J., Petukhov, A. V. & Vromans, H., 5 apr 2018, In : International Journal of Pharmaceutics. 540, 1-2, blz. 178-184 7 blz.

Self-organization in dipolar cube fluids constrained by competing anisotropies

Rossi, L., Donaldson, J. G., Meijer, J. M., Petukhov, A. V., Kleckner, D., Kantorovich, S. S., Irvine, W. T. M., Philipse, A. P. & Sacanna, S., 21 feb 2018, In : *Soft Matter*. 14, 7, blz. 1080-1087 8 blz.

Diffraction based Hanbury Brown and Twiss interferometry at a hard x-ray free-electron laser

Gorobtsov, O. Y., Mukharamova, N., Lazarev, S., Chollet, M., Zhu, D., Feng, Y., Kurta, R. P., Meijer, J-M., Williams, G., Sikorski, M., Song, S., Dzhigaev, D., Serkez, S., Singer, A., Petukhov, A. V. & Vartanyants, I. A., 2 feb 2018, In : *Scientific Reports*. 8, 1, 2219.

Ptychographic X-ray imaging of colloidal crystals

Lazarev, S., Besedin, I., Zozulya, A. V., Meijer, J-M., Dzhigaev, D., Gorobtsov, O. Y., Kurta, R. P., Rose, M., Shabalin, A. G., Sulyanova, E. A., Zaluzhnyy, I., Menushenkov, A. P., Sprung, M., Petukhov, A. V. & Vartanyants, I. A., 18 jan 2018, In : *Small*. 14, 3, 8 blz., 1702575.

Growth of porous anodic alumina on low-index surfaces of Al single crystals

Roslyakov, I. V., Koshkodaev, D. S., Eliseev, A. A., Hermida-Merino, D., Ivanov, V. K., Petukhov, A. V. & Napolskii, K. S., 14 dec 2017, In : *Journal of Physical Chemistry C*. 121, 49, blz. 27511-27520

Entropic patchiness: effects of colloid shape and depletion

Petukhov, A. V., Tuinier, R. & Vroege, G. J., 1 jul 2017, In : *Current Opinion in Colloid and Interface Science*. 30, blz. 54-61 8 blz.

Giant capsids from lattice self-assembly of cyclodextrin complexes

Yang, S., Yan, Y., Huang, J., Petukhov, A. V., Kroon-Batenburg, L. M. J., Drechsler, M., Zhou, C., Tu, M., Granick, S. & Jiang, L., 20 jun 2017, In : *Nature Communications*. 8, blz. 1-7 15856.

Observation of solid-solid transitions in 3D crystals of colloidal superballs

Meijer, J. M., Pal, A., Ouhajji, S., Lekkerkerker, H. N. W., Philipse, A. P. & Petukhov, A. V., 10 feb 2017, In : *Nature Communications*. 8, 8 blz., 14352.

In situ observation of self-assembly of sugars and surfactants from nanometres to microns

Ouhajji, S., Landman, J., Prévost, S., Jiang, L., Philipse, A. P. & Petukhov, A. V., 2017, In : *Soft Matter*. 13, 13, blz. 2421-2425 5 blz.

In situ study of the formation mechanism of two-dimensional superlattices from PbSe nanocrystals

Geuchies, J. J., Van Overbeek, C., Evers, W. H., Goris, B., De Backer, A., Gantapara, A. P., Rabouw, F. T., Hilhorst, J., Peters, J. L., Konovalov, O., Petukhov, A. V., Dijkstra, M., Siebbeles, L. D. A., Van Aert, S., Bals, S. & Vanmaekelbergh, D., 1 dec 2016, In : *Nature Materials*. 15, 12, blz. 1248-1254 7 blz.

Nanoassembly of polydisperse photonic crystals based on binary and ternary polymer opal alloys

Zhao, Q., Finlayson, C. E., Schaefer, C. G., Spahn, P., Gallei, M., Herrmann, L., Petukhov, A. V. & Baumberg, J. J., 1 okt 2016, In : *Advanced Optical Materials*. 4, 10, blz. 1494-1500 7 blz.

Revealing three-dimensional structure of an individual colloidal crystal grain by coherent X-Ray diffractive imaging

Shabalin, A. G., Meijer, J. M., Dronyak, R., Yefanov, O. M., Singer, A., Kurta, R. P., Lorenz, U., Gorobtsov, O. Y., Dzhigaev, D., Kalbfleisch, S., Gulden, J., Zozulya, A. V., Sprung, M., Petukhov, A. V. & Vartanyants, I. A., 22 sep 2016, In : *Physical Review Letters*. 117, 13, blz. 1-6 138002.

In situ probing of stack-templated growth of ultrathin Cu_{2-x}S nanosheets

Van Der Stam, W., Rabouw, F. T., Geuchies, J. J., Berends, A. C., Hinterding, S. O. M., Geitenbeek, R. G., Van Der Lit, J., Prévost, S., Petukhov, A. V. & de Mello Donegá, C., 13 sep 2016, In : *Chemistry of Materials*. 28, 17, blz. 6381-6389 9 blz.

Crystallography-induced correlations in pore ordering of anodic alumina films

Roslyakov, I. V., Koshkodaev, D. S., Eliseev, A. A., Hermida-Merino, D., Petukhov, A. V. & Napolskii, K. S., 8 sep 2016, In : Journal of Physical Chemistry C. 120, 35, blz. 19698-19704 7 blz.

Large-scale ordering of nanoparticles using viscoelastic shear processing

Zhao, Q., Finlayson, C. E., Snoswell, D. R. E., Haines, A., Schäfer, C., Spahn, P., Hellmann, G. P., Petukhov, A. V., Herrmann, L., Burdet, P., Midgley, P. A., Butler, S., Mackley, M., Guo, Q. & Baumberg, J. J., 3 jun 2016, In : Nature Communications. 7, 11661.

Oleic acid-induced atomic alignment of ZnS polyhedral nanocrystals

van der Stam, W., Rabouw, F. T., Vonk, S. J. W., Geuchies, J. J., Ligthart, H., Petukhov, A. V. & de Mello Donega, C., 13 apr 2016, In : Nano Letters. 16, 4, blz. 2608-2614 7 blz.

Effects of added silica nanoparticles on the nematic liquid crystal phase formation in beidellite suspensions

Landman, J., Paineau, E., Davidson, P., Bihannic, I., Michot, L. J., Philippe, A-M., Petukhov, A. V. & Lekkerkerker, H. N. W., 8 mei 2014, In : Journal of Physical Chemistry B. 118, 18, blz. 4913-4919

Long-range orientation and atomic attachment of nanocrystals in 2D honeycomb superlattices

Boneschanscher, M. P., Evers, W. H., Geuchies, J. J., Altantzis, T., Goris, B., Rabouw, F. T., van Rossum, S. A. P., van der Zant, H. S. J., Siebbeles, L. D. A., van Tendeloo, G., Swart, I., Hilhorst, J., Petukhov, A. V., Bals, S. & Vanmaekelbergh, D., 1 jan 2014, In : Science. 344, 6190, blz. 1377-1380 5 blz.

Research expertise

- Soft matter, self-assembly
- Colloids, colloidal crystals, colloidal liquid crystals
- Advanced synchrotron techniques such as SAXS with microradian resolution, GISAXS, high-resolution x-ray microscopy
- Nonlinear optics, surface science, magneto-optics (former)

Output (measured November 2017)

- 159 peer-reviewed publications in Web of Science
- Citation metrics
 - o Web of Science: 3326 citations (350/year); H-index 33
 - o Google scholar: 4188 citations (490/year); H-index 37
- (co)supervision of PhD projects
 - o 10 successfully finished
 - o 3 on-going

More information

- personal page <http://www.uu.nl/staff/APetoukhov/>: research highlights, publication list, information about teaching, auxiliary activities and funding.
- researcher ID <http://www.researcherid.com/rid/B-8235-2009> (with WoS citation data).
- Google scholar <https://scholar.google.com/citations?user=fy8fWSsAAAAJ&hl=en>.
- Research Gate https://www.researchgate.net/profile/Andrei_Petukhov.