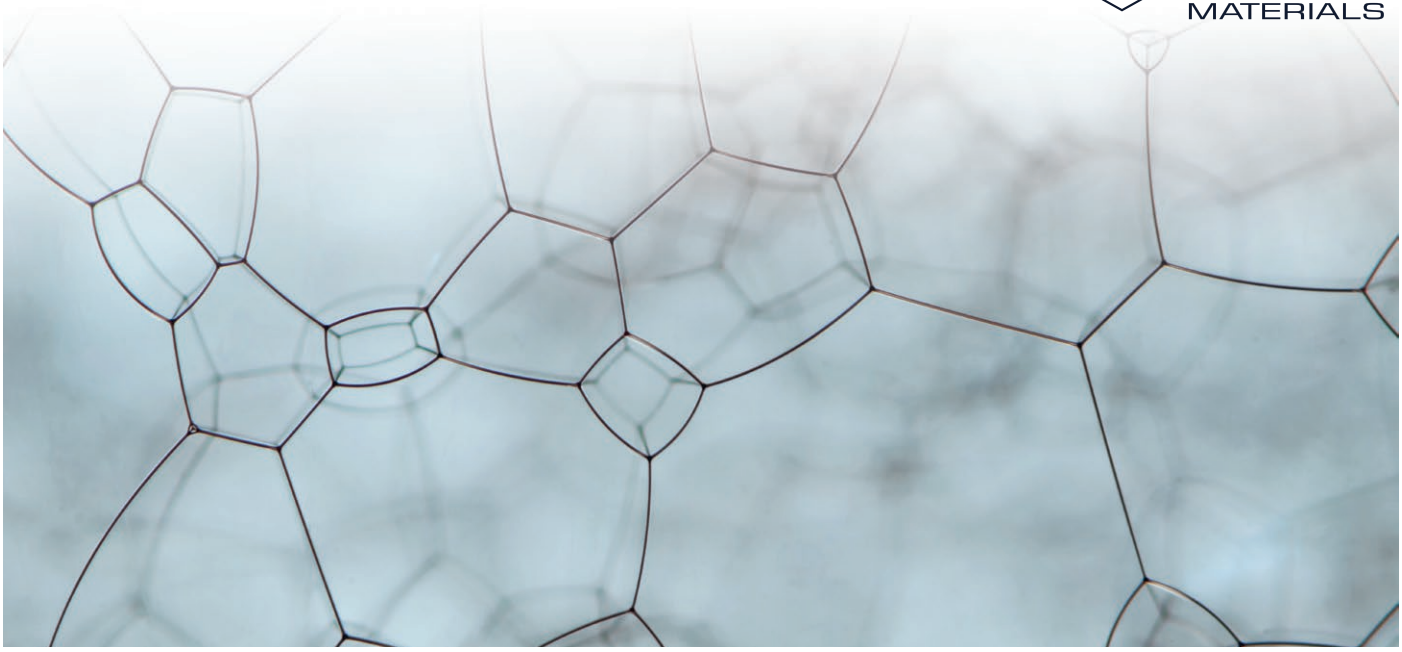
TECHNOPOLIS GS
GS GROUP

NCM
NANOCARBON
MATERIALS



NCM Chrome – a Unique Chrome Plating Technology from GS Group

In 2012, the GS Group investment and industry holding company presented its own development in the field of nanocarbon materials – a chrome plating technology NCM Chrome using an additive which contains nanocarbon to provide products with unique properties. Nanostructured carbon material (NCM) is produced at the innovation cluster Technopolis GS at the unique Russian plant with an activation line, Nanocarbon Materials, LLC.

PROPERTIES OF NCM CHROME

NCM Chrome technology is a high-performance method for hard, wear and corrosion resistant decorative chrome plating without fluorides. This technology reduces the consumption of materials and ensures environmental friendliness of the chrome plating process. It allows increasing the rate of chrome plating by 1.5 times, reducing power consumption by 1.5–2.5 times, making chrome nano-coating up to hundreds of microns in order to provide a wide variety of functional properties.

NCM Chrome coating has unique physical, mechanical and operational properties:

- Micro-hardness up to 1400 HV;
- Chrome coating coefficient of dry friction 0.05 to 0.07;
- High resistance to corrosion wear;
- Increased thermal stability up to 1000°C;
- High capability for subsequent polishing;
- Providing necessary micro fissuring and low crystallinity;
- Durability increase by 2.5-3 times.

NCM Chrome plating technology is successfully used for more than 3 years in Russia, China, Taiwan and other countries.

PRODUCTION AT NANOCARBON MATERIALS, LLC

Nanocarbon Materials, LLC is a unique production of nanomodified carbon materials in Russia. The unit used for the production of NCM is developed on the basis of in-depth scientific, design and technological investigations held by the GS Group experts.

NCM Chrome additive and the cognominal chrome plating technology ensures high results in mass industrial production. The technology is successfully used by multiple customers who noted the unique properties of the products after coating, increased performance and, finally, high economic efficiency. The standard equipment used for the chrome plating process is widely available at all Russian and foreign facilities and ensures unimpeded implementation of the technology without any extra expenses.

AMONG NANOCARBON MATERIALS, LLC CUSTOMERS:

- Shtok-Avto, LLC plant for vehicle components production located in the town of Ulyanovsk. The plant successfully applies NCM Chrome for making a hard chrome coating on vehicle piston rods and gate valves for oil and gas industry.
- Tyazhpromarmatura, JSC (the town of Aleksin) manufactures valves and isolation valve components for oil and gas industry by applying NCM Chrome developed and produced by Nanocarbon Materials, LLC.
- Kostroma Car Components Factory, JSC manufactures piston rings with original chrome coating produced under the NCM Chrome technology.

The company Nanocarbon Materials, LLC is capable of providing customers the NCM Chrome additive for filling galvanic baths up to 100 cubic meters per month.

NCM CHROME APPLICATIONS

Coating with NCM Chrome electrolyte on the basis of a nanocarbon additive is applied to all grades of carbonic and stainless steel, copper and copper alloys, deforming aluminum alloys, aluminum alloys with high content of silicon, various cast iron grades.

PRIMARY APPLICATION AREAS OF THE TECHNOLOGY:

- Oil and gas industry (treatment of drilling pipes, gate valves, ball valves, drills for drilling equipment);
- Automobile manufacturing (large-scale application, including parts of the cylinder-piston group, stems of hydraulic cylinders, protection and decorative finish);
- Metal-processing industry (cutting instruments, stamps, casting molds, hardware for deep cold metal extract);
- Dies for manufacturing plastic and rubber products;
- Weaving industry (processing parts of machines);
- Metallurgy (chrome plating of crystallizer pan for continuous casting of steel);
- Medical industry (dental borers, surgical cutters, tools for microsurgery and ophthalmologic surgery);
- Metal powder industry (dies);
- Production of small tools (hack saw blades, files, needle files);
- Timber industry (circular and band-saws);
- Consumer goods (mincing machine cutters, razor blades, sewing needles);
- Machine and ship building;
- Production of tools.

Currently, the company Nanocarbon Materials, LLC conducts studies for expanding the application areas of the NCM Chrome technology and activated nanomodified carbon. High sorption properties of NCM have proved its efficiency in decontaminating vent discharges, electroplating wastes containing heavy metal ions, in composite materials.

Vladimir Kokhia, CEO of Nanocarbon Materials, LLC.
"We managed to bring the traditional chrome plating technology to a new level in terms of expanding functional properties and providing environmental friendliness of production. We offer our customers to make a complex audit of chemical and galvanic works, alloy metals and non-metals processing. Nanocarbon Materials, LLC is looking forward to developing new technologies by applying NCM. Studies are conducted in the field of iron plating, phosphatization, nickel-plating and anodizing, making super capacitors and fine nanofilms, films for electronic industry".