

Technical data sheet: Sol-G

Graphene in aqueous solution.

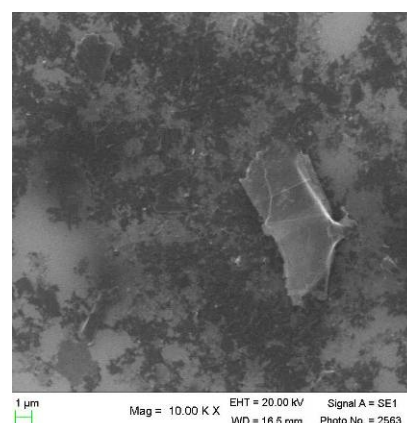
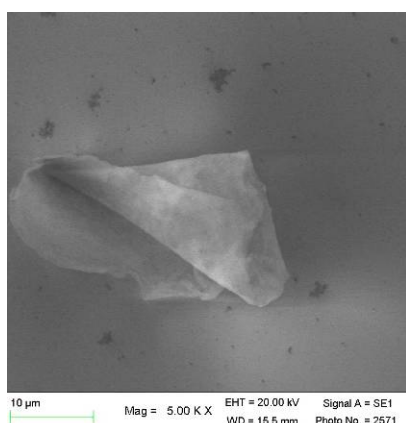
Description:

Graphos Sol-G is a high quality pristine graphene suspended in water. It is produced by chemical exfoliation of graphite and has a typical concentration of 0,4 mg/ml.



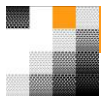
Graphos Sol-G.

The low amount of exfoliating agent, less than 1% wt., yields high quality graphene flakes with a lateral dimension up to 30 micron. No oxidation processes are involved in the production of Graphos Sol-G, giving to this product the excellent electronic and mechanical properties of graphene.



SEM image of few layers sheet and bulky material from Graphos Sol-G.

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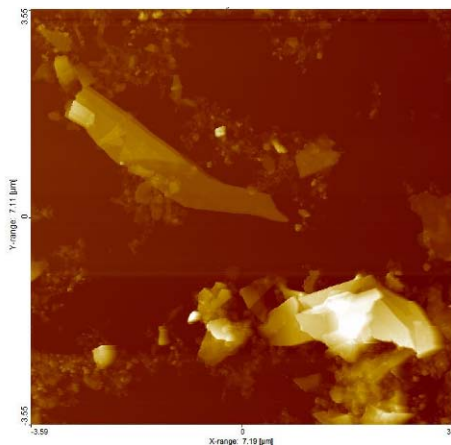


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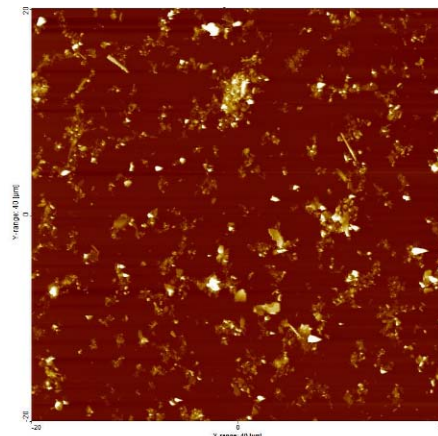
A thin film of Graphos Sol-G obtained by filtering can reach a sheet resistance up to 15 Ω /square with thickness lower than 50 micron.

A conductive thin film can be easily prepared by a simple deep coating procedure on flexible plastic films, yielding a sheet resistance of 14 k Ω /square and 65% transmittance of visible light. Films prepared by Graphos Sol-G are very stable against bending or scratching stress.

AFM images of Graphos Sol-G spin coated on silicon oxide substrate.



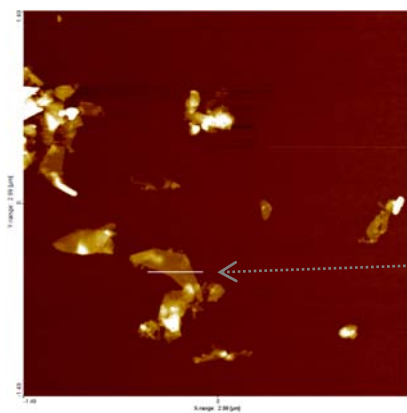
7 x 7 Micron



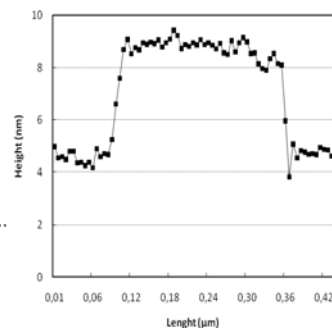
40 x 40 Micron

The sheet thickness measured by AFM is between 2-4 nm as function of the sample preparation methodology.

AFM images and profile of Graphos Sol-G spin coated on silicon oxide substrate

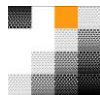


7 x 7 Micron



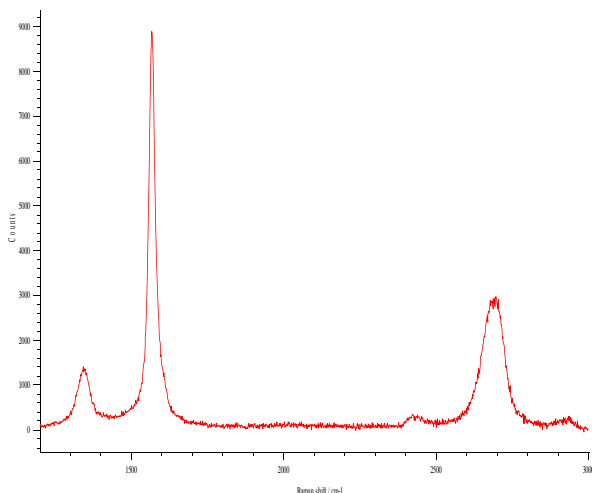
3.5 nm sheet thickness height profile

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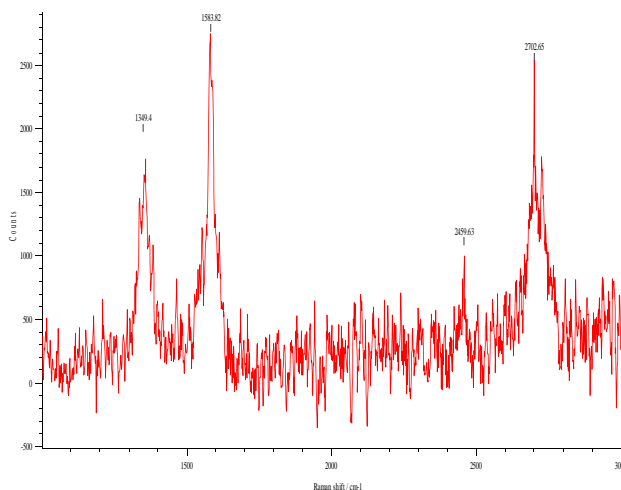


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Micro-Raman at 514 nm laser (green).



Bulky material at 2 mW power.

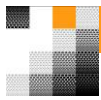


Trilayer flake 0.2mW power.

Main features:

	Value	Method	Note
Monolayers	~50%	AFM	
Bi-layers	~25%	AFM	
Few-layers	~18%	AFM	
Thick flakes	≤7%	AFM	Thickness >20 nm
Average flake lateral dimension	150 nm	AFM	
Maximum flake area	900 μm ²	SEM	
Sheet resistance vs. light transmission	14 kΩ/square T = 65% 600 kΩ/square T = 85%	Proprietary	Optical spectroscopy 500-700 nm
pH	Neutral		
Concentration	~0.4 mg/ml	Gravimetric & spectroscopy	Extinction coefficient ε=1650 ml/mg*m
Exfoliation agent	<1% wt.		

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It is normal to see some reaggregation at the bottom of the sample, this is due to the graphene flakes which tend naturally to restack on graphite structure.

We strongly recommend 20 min sonication before using Graphos Sol-G, please use a suitable filter in case of clogging risky equipment.

Notwithstanding internal tests demonstrate a stable quality after one year storage, our suggestion is to use Graphos Sol-G within few months.

This data sheet briefly describes and gives typical data for some of the basic properties of Graphos Sol-G. It is emphasized that all data in this publication have been obtained from laboratory tests on representative samples. Thus, although the values are typical, they are for very general guidance and must not be used as a basis for specifications.

Sample should be stored dry and away from direct sources of heat. More detailed information and advice on individual products may be obtained from the Sales Contacts.

Information contained in this publication, and otherwise supplied to users, are based on our general experience and are given in good faith, but we are unable to accept responsibility in respect of factors which are outside our knowledge or control.

Is the responsibility of the customer to ensure that the use complies with all relevant regulations. Graphos grade should be use for research purpose.

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