XG sciences
THE MATERIAL DIFFERENCE

SIG

TECHNICAL DATA SHEET

SIG Energy Storage Materials

Silicon-graphene Li-ion battery anode

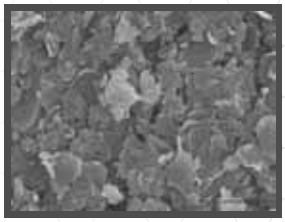
High Energy Anode - XG Sciences' *AN-S* delivers high specific capacity in an **xGnP®** graphene-stabilized silicon anode material for enhanced run-time portable electronics. Our proprietary manufacturing process coats silicon particles with highly conductive, flexible graphene platelets establishing a network that provides silicon with robust mechanical support and high rate capacity.

General characteristics:

- ***Composition*** - Silicon graphene
- ***Morphology*** - Porous aggregates
- ***High reversible capacity***
- ***Efficient Li+ storage***
- ***Enhanced life cycle***

AN-S Si-graphene anode properties

Reversible Capacity	600-2000 mAh/g
1st cycle efficiency	85-90%
Charge/discharge rate	C/2
Discharge temperature	30°C
Recommended binders	Carboxy methyl cellulose (CMC) Polyacrylic acid (PAA)



xGnP® Graphene

Conductive additive

xGnP® Graphene Nanoplatelets are short stacks of graphene sheets in a platelet shape. Typical platelet electrical conductivity parallel to the surface is 10^7 S/m.

xGnP® Graphene bulk properties

Appearance	Black granules
Bulk density	0.1 g/cc
Carbon content	>99.5%
Oxygen content	<1%