

Development of Nano-sized Graphene Flowers as Neutron Reflectors -Intensify neutron beam caused by coherent scattering-

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Science using neutrons in the nanometer (nm) wavelength region as probes is expanding into a wide range of fields, from basic research in materials and life science to industrial applications. Dramatic increase in the intensity of the beam source is required to drive such research. We have focused on coherent scattering caused by nano-sized particle aggregations to increase the intensity of neutron beams. Nanodiamond is being vigorously researched and developed with the aim of practical application. On the other hand, we have focused on graphene, which has higher van der Waals forces by an order of magnitude and stronger bonding, sp², between carbons than nanodiamond. This is expected to lead to its processability into a lumped form and to adapt to higher radiation fields. By promoting chemical vapor deposition (CVD), we have established a technique to form nano-sized graphene (called graphene flower) with a shape similar to a sunflower flower. In this talk, we report on the neutron scattering properties that contribute to the coherent scattering of the newly developed graphene flower.

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