

Long sought two-dimensional graphitic semiconductor discovered

A European team of chemists and physicists, including Dr. Nikolai Severin and Professor Jürgen P. Rabe of the Department of Physics of Humboldt-Universität and the Joint Laboratory of Structural Research at **IRIS Adlershof**, have discovered a new quasi two-dimensional semiconductor related to graphene (see [comment in ars technica](#)). The novel material, 'triazine-based graphitic carbon nitride' (TGCN) was predicted theoretically in 1996, but this is the first time that it has been presented. TGCN is a member of the graphene family, of which only five non-metallic 2D materials were known up to date: graphene itself, hexagonal boron nitride, boron carbon nitride, fluorographene and graphene oxide. TGCN is structurally similar to graphite but a semiconductor, which is of high interest for opto-electronic applications.

Cooperation partners in this project are Dr. Michael J. Bojdys and Professor Arne Thomas (TU Berlin), Professor Markus Antonietti (MPI of Colloids and Interfaces) and five further groups from the UK, Germany and Finland. Within IRIS Adlershof 2D atomic crystals play an important role in the Research Area "Hybrid Systems for Optic and Electronics".

Triazine-Based Graphitic Carbon Nitride: a Two-Dimensional Semiconductor

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Angew. Chem. 126 (2014) 7580
 DOI: [10.1002/ange.201402191](https://doi.org/10.1002/ange.201402191)
Angew. Chem. Int. Ed. 53 (2014) 7450
 DOI: [10.1002/anie.201402191](https://doi.org/10.1002/anie.201402191)

