Transparent Conductive Anodes for Solid-State Lighting

Project Objectives

Develop reduced Graphene Oxide (rGO) films suitable to use as Transparent Conductive Electrodes (TCE)

- Reproducible fabrication of rGO films on non-conductive substrates
- Demonstrate control over the number of rGO layers and the separation distances between rGO layers
- Develop low temperature GO reduction methods

Milestones and Expected Results

- GO reduction procedure suitable for glass and polymer substrates – Feb, 2019
- Regression analysis of sample structure, reducing conditions vs transparency and electrical conductivity – Mar, 2019
- Demonstration of optimized rGO TCE sample – Mar, 2019

Company and Team

Tetramer's principal mission is to develop applied materials through the design and synthesis of unique molecular architectures that meet target properties desired by our customers. With over 200 collective years of expertise in materials development, Tetramer invents, manufactures, and markets specialty materials with high value added performance.

Tetramer Technologies
- GO reduction procedures
- Optical and electrical characterization of rGO
- Structure-properties mapping (regression analysis)

Principal Investigator: Bogdan Zdyrko
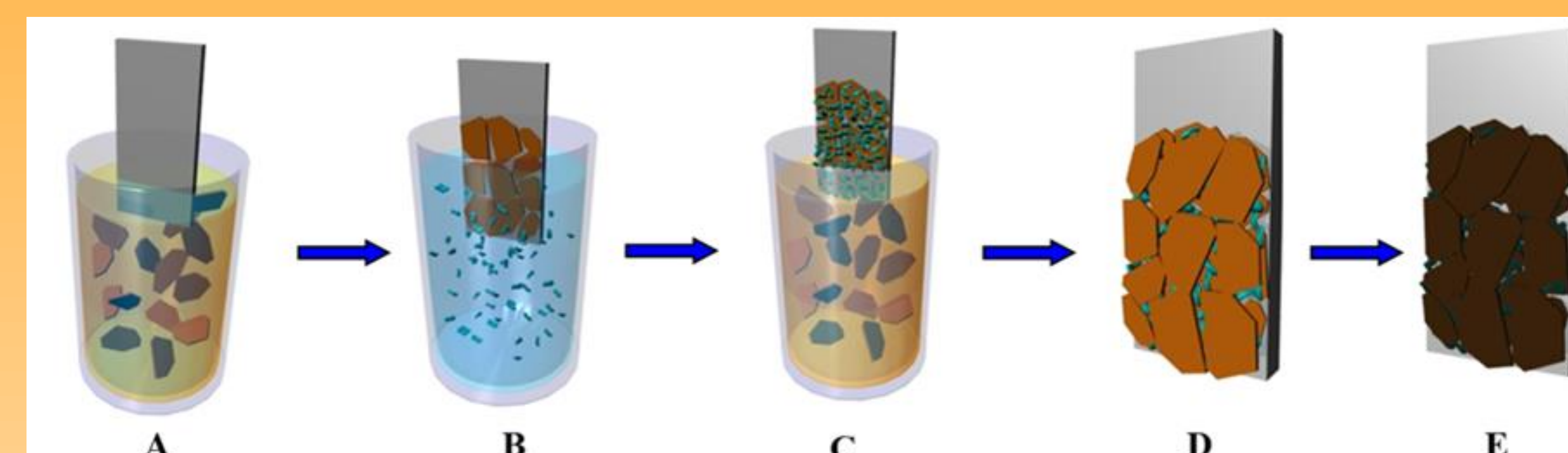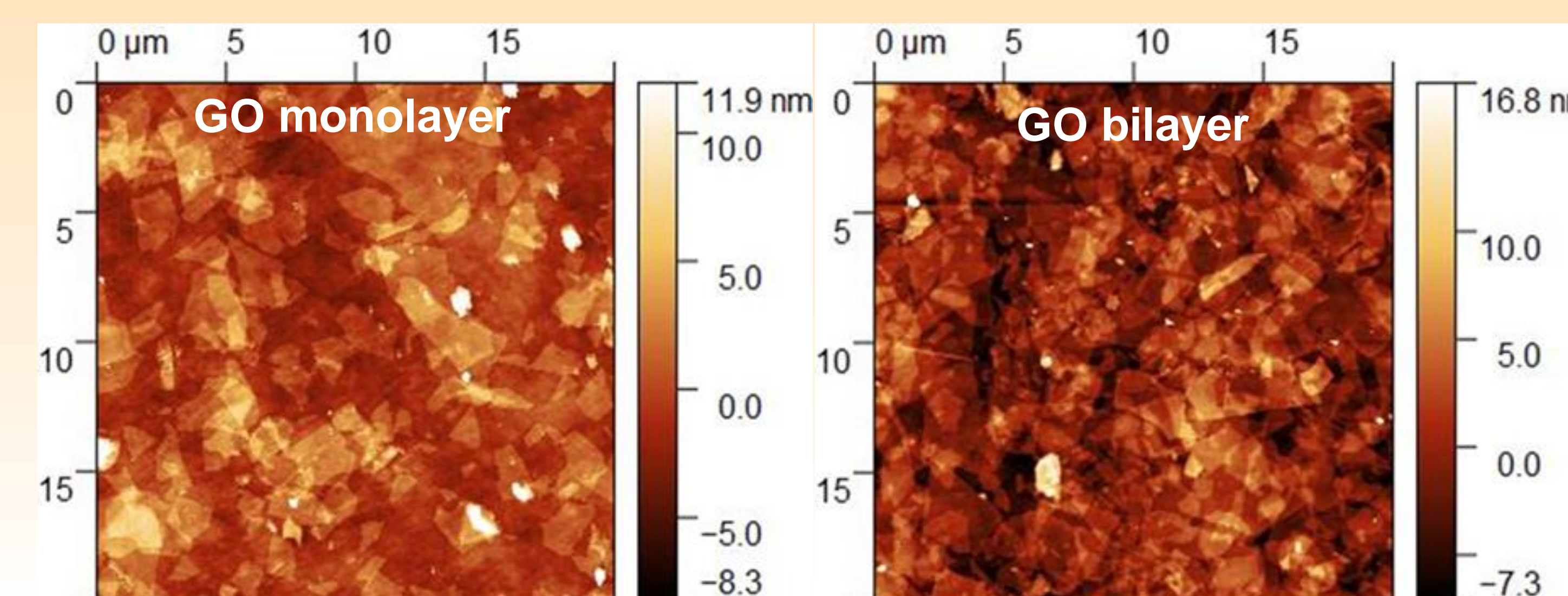Senior Research Scientist: Michael Schreuder

Clemson University
- GO-polymer composite
- GO multilayers preparation
- GO and rGO multilayers characterization

TPOC: Prof. Igor Luzinov

Project Elements and Technology

- A - Deposition of a monolayer of GO sheets enveloped with a polymer layer by dip-coating
- B - Deposition of a polymer interlayer (polyacrylic acid, PAA) by adsorption
- C - deposition of the second GO layer by dip-coating
- D - final double layer system composed of GO
- E - the system after GO reduction (composed of rGO)

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