THE ROLE OF GRAPHENE IN CHARACTERIZING LAYERED MATERIALS

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Starting with the general public consideration of graphite as a material too complex for detailed study 70 years ago, I will trace my experience with establishing for myself why graphite was worth studying, based on the conceptual promise of graphene. I also tried to study what were some of the special characteristics of graphite that might interest other people in sp^2 carbon generally. I found graphene-related materials that were available to me to have interesting and unusual electronic properties that could be studied with techniques available to me. I was persuaded that the new resulting research directions suggested by sp^2 carbons would be interesting, some examples being carbon fibers, clusters, nanotubes, and later nanoribbons. Studies of sp^2 carbons brought our research group into new categories of layered materials in the early 1990s, like transition metal dichalcogenides in bulk form. After the Novoselov and Geim graphene paper in 2004, our research group also expanded our activities into nano forms of different types and for different layered materials. Over the years, learning with and from my students and postdocs has expanded my research program and has advanced science and its application to society on an international basis.