

Układy bogate w węgiel: 1-haloalkiny i nie tylko : (krótki przekrój badań prowadzonych w zespole Chemii Metaloorganicznej i Materiałów Funkcjonalnych na Wydziale Chemii Uniwersytetu Wrocławskiego) = Carbon-rich system: 1-haloalkynes and beyond : (a brief overview of the research conducted in the Organometallic and Functional Materials Chemistry Group at the Faculty of Chemistry, University of Wrocław)

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Continuous technological progress is driving the miniaturization of all types of electronic devices, which presents scientists with the challenge of constantly searching for new materials and achieving an ever deeper understanding of processes occurring at the molecular level. The miniaturization of computer technologies, for instance, has led to the pursuit of transistors built from single molecules. Particularly important in this context are new carbon-based materials such as graphite, graphene, carbon nanotubes, graphynes, and others. A very promising material is predicted to be carbyne — a still poorly understood allotropic form of carbon in which the atoms adopt sp hybridization. Although this material itself has not yet been isolated, its short-chain homologues are known and can be used as molecular wires and switches. This paper discusses the synthesis of polyyne systems, particularly 1halopolyynes, which exhibit remarkable properties and a wide range of potential applications. The synthesis methods of 1-halopolyyne compounds and their reactivity are presented, with particular emphasis on the reversed Sonogashira coupling reaction, the synthesis of ynamine derivatives, and their use in the preparation of heterocyclic compounds. The paper also addresses other topics, including the formation of macroscopic assemblies by 1-halopolyynes via halogen bonding, the synthesis of polyhaloacetylene materials from monomers based on polyhedral oligomeric silsesquioxanes, and the synthesis of non-alternant polycyclic aromatic hydrocarbons derived from azulene. The presented results provide a brief overview of the research on these topics carried out by the Organometallic and Functional Materials Chemistry Group at the Faculty of Chemistry, University of Wrocław.

Słowa kluczowe

1-haloalkynes, polyhedral oligomeric silsesquioxanes, non-alternant polycyclic aromatic hydrocarbons, coupling reactions, polyynes

1-haloalkiny, poliedryczne oligomeryczne silseskwioksany, nienaprzemienne policykliczne węglowodory aromatyczne, reakcje sprzęgania, poliyny

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