2020 Hans & Marlies Zimmer International Scholar

Panče Naumov

New York University Abu Dhabi,
United Arab Emirates

Dr. Panče Naumov is a tenured professor at the Division of Science and Mathematics, New York University Abu Dhabi (NYUAD), with a cross-appointment at the Department of Chemistry, New York University in NYC, and leader of the Smart Materials Lab (SML) at NYUAD. Since 2018 he has also been affiliated with Harvard University's Radcliffe Institute. The Naumov's Smart Materials Lab is the leading research team in chemistry and materials science in the UAE with an output, according to Nature Index, that accounts for about 40-60% of the high-impact publications in chemistry in the country each year.

Dr Naumov holds a Ph.D. in chemistry and materials science from the Tokyo Institute of Technology (2004) and a BSc from Ss Cyril & Methodius University in Macedonia. Prior to his appointment at NYU Abu Dhabi, he was a faculty at Osaka University and Kyoto University in Japan and a research fellow at the Japanese National Institute for Materials Science (NIMS).

His research portfolio includes about 260 publications that have been cited more than 6,400 times, with an *h* factor of 43. His publications include a number of articles in leading chemistry journals such as Nature Chemistry, Nature Reviews Chemistry, Nature Communications, Chemical Reviews, Journal of the American Chemical Society, and Angewandte Chemie, among other journals, and many have been highlighted on the journal covers.

During his positions in Japan and the UAE, he raised over $12 M of intramural and extramural funding. At conferences or other scientific meetings, he has presented over 400 times and has also given about 90 invited talks at various institutions. Since 2012, he has supervised over 60 students, including undergraduate projects, capstone projects, and PhD theses. He is an active reviewer of over 60 international journals and over ten national and international funding agencies, including the National Science Foundation (NSF), US; European Research Council (ERC), EU; The Petroleum Fund, American Chemical Society (PRF/ACS), US; Russian Scientific Fund (RSF), Russian Federation; National Research Foundation (NRF), South Africa, The International Foundation for Science (IFS), Sweden, and others.

Dr. Naumov is the founder of the UAE Chapter and a fellow of the American Chemical Society (ACS), the world's largest scientific society. He is also a founder and President of the Emirates Crystallographic Society (ECS), a councilor of the European Crystallographic Association (ECA), and a consultant for the International Union of Crystallography (IUCr). For his accomplishments, he has been awarded a graduate fellowship from the Japanese Ministry of Education and Science ('00), Human Frontier Science Project (HFSP) award ('11), Asian and Oceanian Photochemistry Association Prize ('14), Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation ('15), Radcliffe fellowship at Harvard University ('18), The Hans and

Marlies Zimmer International Scholar Program Award ('20), and a 'golden visa' by the UAE Government for outstanding contributions to the country ('20).

He currently is a member of the American Chemical Society (founder of the ACS UAE Chapter), The Royal Society of Chemistry (RSC), European Crystallographic Association (ECA), American Crystallographic Association (ACA), and Mohamed Bin Rashid Academy of Scientists (MBRAS, the National Academy of Science of the UAE), among other organizations. Healso is a member of the International Advisory Board of the journal Angewandte Chemie, one of the leading chemistry journals published by the German Chemical Society.

Organic Crystals – a new class of engineering materials

The anticipated shift in focal point of interest of solid-state chemists, crystal engineers and crystallographers from structure to properties to function of organic solids parallels the need to apply our accumulated understanding of the intricacies of crystal structure to explaining the related properties, with the ultimate goal of harnessing that knowledge in applications that require soft, light-weight, and/or biocompatible organic solids.[1] In these developments, the adaptive molecular single crystals warrant a particular attention as an alternative choice of materials for light, flexible, and environmentally benign devices, primarily memories, capacitors, sensors, and actuators. Some of the outstanding requirements for application of these dynamic materials as high-efficiency energy storage devices are strongly induced polarization, high switching field, and narrow hysteresis in case of reversible dynamic processes. However, having been studied almost exclusively by chemists, molecular crystals still lack the appropriate investigations that reliably evaluate their reproducibility, scalability, and actuating performance, and some important drawbacks have diverted the interest of engineers from these materials in applications. United under the umbrella term crystal adaptronics, the recent research efforts aim to realistically assess the appositeness of dynamic crystals for applications that require fast, reversible and continuous operation over prolonged periods of time. With the aim to highlight the most recent developments in the research of adaptive molecular crystals, this Perspective article discusses their assets and pitfalls. It also provides some hints on the likely future developments that capitalize on the untapped, sequestered potential for applications of this distinct materials class.