

At the University of Silesia, almost two thousand academics representing 25 scientific disciplines conduct their work within over 600 research teams, 16 interdisciplinary research centres and 250 research projects. The most important research areas can be divided into three main Transform4Europe themes:

### **Digital transformation and smart regions**

- Cyberpsychology; the relationship between human and robot in the workplace; human-robot interaction, trust in collaborative robots; psychological aspects of human interaction with technology (Anita Pollak, Mateusz Paliga)
- Innovative places in the space of European metropolises; metropolisation of a creative city (Robert Pyka, Krzysztof Bierwiaczonek, Elżbieta Zuzańska-Żyśko)
- Artificial intelligence and technology development - social and cultural determinants; CDR (Corporate Digital Responsibility); learning regions and organizations; creative class, creative cities, creative regions (Małgorzata Suchacka)
- Philosophy of technology, political economy; development of digital technologies in the Anthropocene) (Michał Krzykowski)
- Robot cultures, new media and technologies; transmedia, affect studies, posthumanist subjectivities, the semantics of love (Anna Malinowska)
- Cyborgization, media ecology, visual anthropology, techno and cyberculture; new media art, cyberspace, social media and post-privacy, ubicomp, HCI design (Anna Maj, Piotr Zawojski)
- Hermeneutics of video games, a combination of game studies and utopian studies; cultural aspects of video games (Michał Kłosiński, Agnieszka Kliś-Brodowska)
- Cognitive science in literature, cinema and video game studies; aesthetics, emotions, affect, psychology of aesthetic experience (Bartosz Stopel)

### **Social transformation, community building and inclusion**

- Just transition, social determinants of changes and conflicts around the transition of coal mine industry; revitalization of post-industrial estates, activation of local communities, improvement of the quality of life in cities and metropolitan areas (Łukasz Trembaczowski)
- Development of social inclusion and democratization of social life, civic attitudes and social participation (Beata Skotnicka, Witold Mandrysz)
- Socio-cultural and economic conditions of contemporary migrations; national and ethnic minorities, migrations and depopulation (Rafał Cekiera, Wiktor Widera, Justyna Kijonka, Anna Muś)
- Political participation – new determinants, contemporary challenges; civil society, electoral volatility, electoral behaviour, populism, grey voters (Agnieszka Turska-Kawa)
- Urban and settlement geography, socio-economic geography, spatial planning and urban planning (Robert Krzysztofik)
- Critical infrastructure as a condition for society's survival; terrorism and international conflicts; tactics of carrying out terrorist attacks; International and ICT security; cyber

jihadism; propaganda activities of Islamic terrorist organizations on the Internet as a threat to state security (Miron Lakomy, Karolina Wojtasik, Katarzyna Czornik)

- Urban and public spaces, venues of power; urban activism and contemporary art; humanities of space, oikology (Barbara Głyda, Aleksandra Kunce)
- Anthropology of the city, border regions and multicultural issues; issues of deindustrialization changes, social awareness of post-industrial urban communities, cultural identity of local communities, regional and multicultural education (Małgorzata Szalbot, Marek Rembierz)

### **Environmental transformation and sustainability**

- Global climate change and its impact on the life processes of organisms, biology and biotechnology of plants and microorganisms; analysis of the population of microorganisms, plants and animals (Barbara Tokarska-Guzik, Anna Orczewska, Mariusz Grabiec)
- Climate change at various spatial and temporal scales; air quality and pollution (Ewa Łupikasza, Mariola Jabłońska)
- Searching for effective methods of bioremediation of polluted environments, including polycyclic aromatic hydrocarbons, phenol derivatives and other compounds resulting from the activities of the mining and metallurgical sectors as well as environmental biomonitoring with the use of microorganisms and plants; revitalization of post-mining waste dumps (Gabriela Woźniak, Agnieszka Kompała-Bąba, Małgorzata Pacwa-Płociniczak)
- The environmental impact of post-coal waste landfills and environmental markers of fossil fuels (Iwona Jelonek, Piotr Siupka)
- Toxicity of nanoparticles introduced into the environment concerning various groups of organisms (Sławomir Sułowicz)
- Functioning of ecosystems, maintaining their connections and shaping new ones, selecting plant and animal species in spatial planning, taking into account the threats caused by invasive species and plant-phytoindicators as natural indicators of environmental threats (Agata Daszkowska-Golec)
- Genetic, biochemical and physiological analyzes of the response of various organisms to abiotic environmental stresses and environmental pollutants (Marek Marzec, Agnieszka Babczyńska)
- Security of water, energy and food supplies in terms of physicochemical identification of changes taking place in matter (Andrzej Woźnica)
- Adapting societies and economies to "radical phenomena", including medical phenomena, such as virus and bacterial pandemics, as well as long-term exposure to accumulated environmental pressures, including pollution with heavy metals, organic substances, electromagnetic fields and "new" pollutants such as nanomaterials, and active substances (Tomasz Płociniczak)
- Remediation of the environment, including the industrial environment, inter alia, rational use of waste; green energy - conversion of waste energy (Mirosław Chorążewski)
- Development and implementation of various chemometric tools to optimize experiments and processes following the idea of "green chemistry", as well as modelling multidimensional physicochemical data to support e.g. advanced medical diagnostics, construction of intelligent laboratory systems (Marian Paluch)

- Drug research and design of new active substances supporting the fight against cancer; styrylquinazoline; nanopharmacology (Maciej Serda, Robert Musioł)
- Properties of materials for use in photovoltaics, modern energy and pharmacy (Barbara Machura, Ewa Schab-Balcerzak)
- Sustainable development in education, environmental education (Natalia Ruman)
- Environmental ethics, climate justice, political philosophy and deconstruction (Aleksander Kopka)