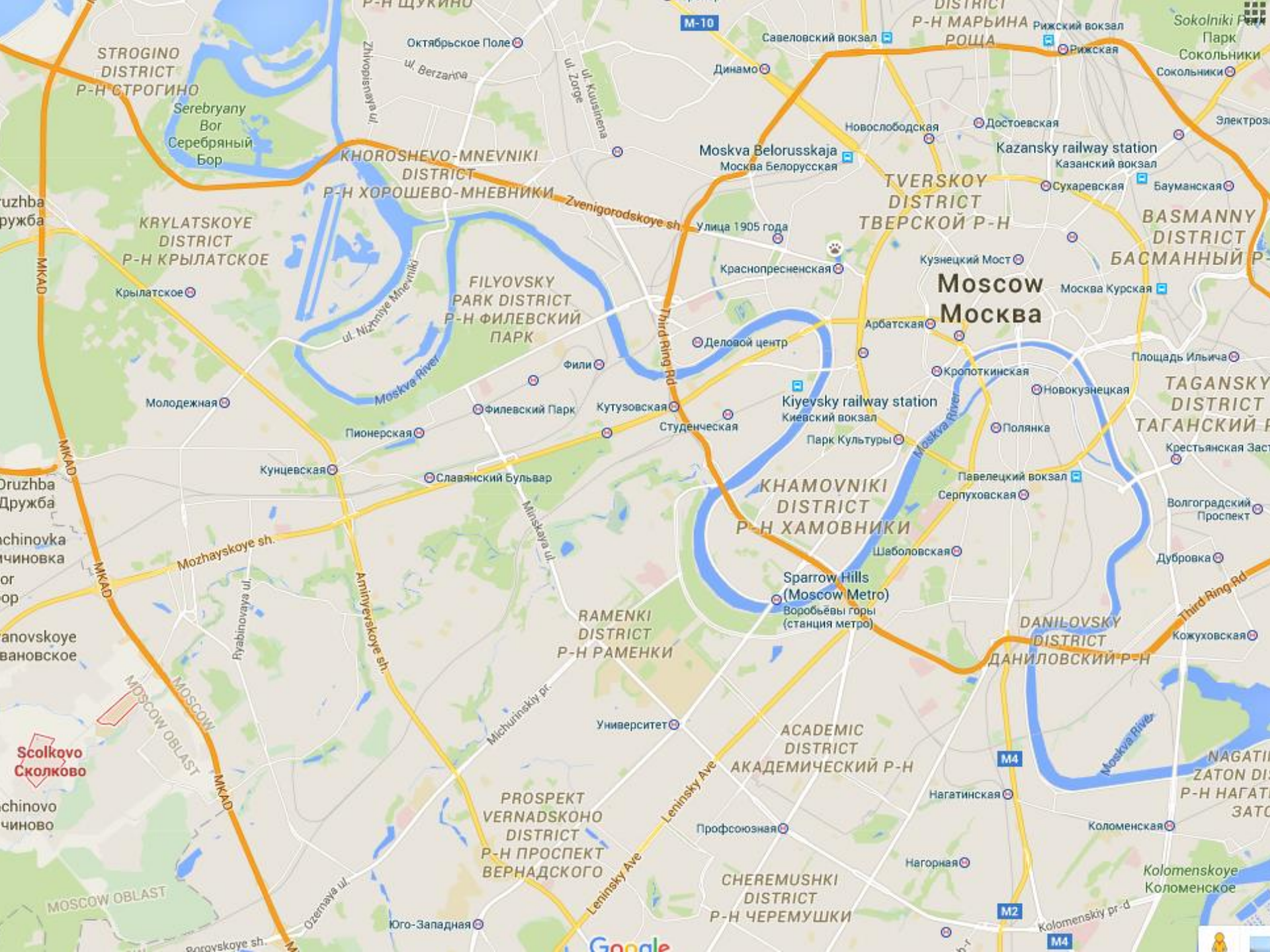
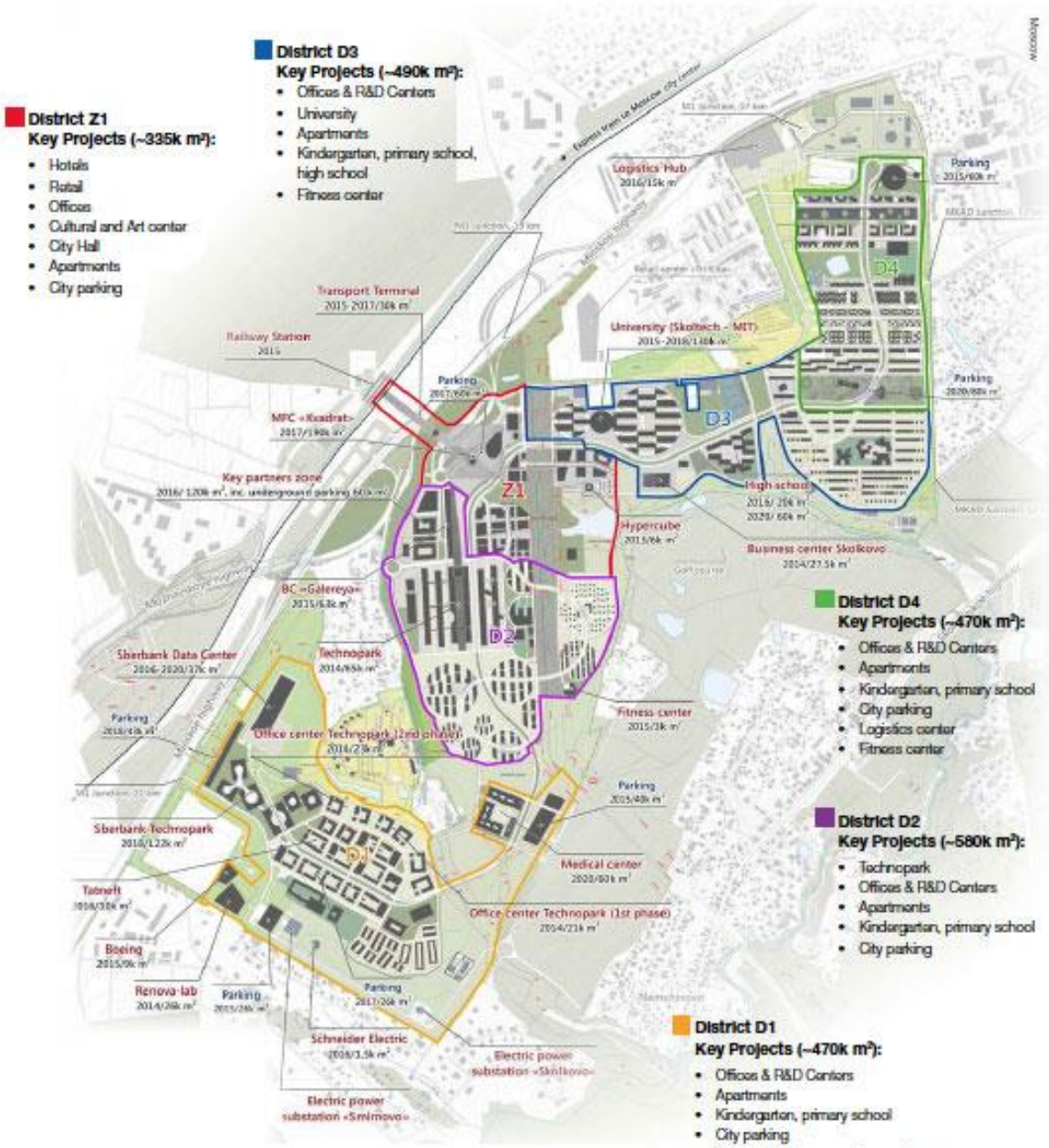
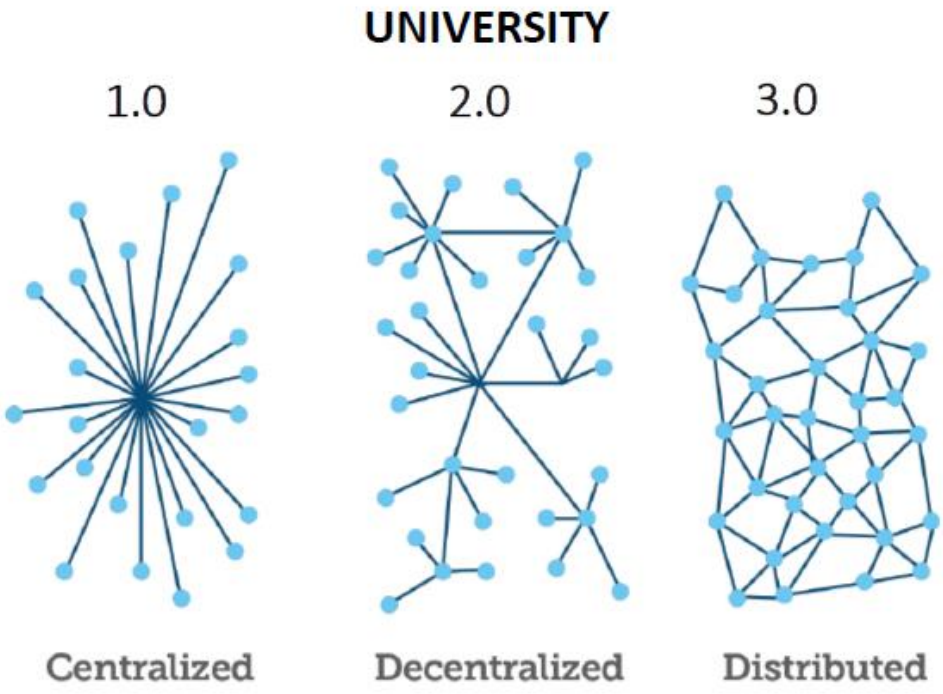

Welcome Participants!
2nd International Conference of Young Scientists
Topical Problems of Modern Electrochemistry and Electrochemical Materials Science


STROGINO DISTRICT
Р-Н СТРОГИНО
Serebryany Bor
Серебряный Бор
KHOROSHEVO-MNEVNIKI DISTRICT
Р-Н ХОРОШЕВО-МНЕВНИКИ
KRYLATSKOYE DISTRICT
Р-Н КРЫЛАТСКОЕ
FILYOVSKY PARK DISTRICT
Р-Н ФИЛЕВСКИЙ ПАРК
KHAMOVNIKI DISTRICT
Р-Н ХАМОВНИКИ
RAMENKI DISTRICT
Р-Н РАМЕНКИ
ACADEMIC DISTRICT
АКАДЕМИЧЕСКИЙ Р-Н
PROSPEKT VERNADSKOHO DISTRICT
Р-Н ПРОСПЕКТ ВЕРНАДСКОГО
CHEREMUSHKI DISTRICT
Р-Н ЧЕРЕМУШКИ
TVERSKOY DISTRICT
ТВЕРСКОЙ Р-Н
DANILOVSKY DISTRICT
ДАНИЛОВСКИЙ Р-Н
BASMANNY DISTRICT
БАСМАННЫЙ Р-Н
TAGANSKY DISTRICT
ТАГАНСКИЙ Р-Н
DISTRICT
Р-Н МАРЬИНА РОЩА
Moscow
Москва
Sparrow Hills (Moscow Metro)
Воробьёвы горы (станция метро)
Kiyevsky railway station
Киевский вокзал
Moskva Belorusskaja
Москва Белорусская
Kazansky railway station
Казанский вокзал
Savelovsky vokzal
Рижский вокзал
Павелецкий вокзал
Октябрьское Поле
Динамо
Новослободская
Достоевская
Сухаревская
Бауманская
Улица 1905 года
Краснопресненская
Кузнецкий Мост
Москва Курская
Арбатская
Деловой центр
Площадь Ильича
Кропоткинская
Новокузнецкая
Полянка
Парк Культуры
Крестьянская Застава
Фили
Филевский Парк
Кутузовская
Студенческая
Молодежная
Пионерская
Кунцевская
Славянский Бульвар
Серпуховская
Шаболовская
Дубровка
Волгоградский Проспект
Кожуховская
Нагатинская
Коломенская
Нагорная
Профсоюзная
Университет
Юго-Западная
Крылатское
Рижская
Сокольники
Парк Сокольники
Zvenigorodskoye sh.
Mozhayskoye sh.
Aminyevskoye sh.
Borovskoye sh.
Third Ring Rd
Leninsky Ave
Moskva River
MKAD
M-10
M4
M2
Scolkovo
Сколково
MOSCOW OBLAST
Google

Skolkovo Innovation Center



Cultivating Digital Natives for the Modern Technological Age in Russia and Beyond



Student body
- Centennials ("Gen-Z")
- Experience-focused
- Multi-cultural
- Self-teaching
- Divided attention ("ADD")

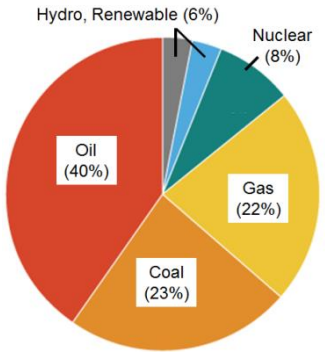
Education
- Innovative
- Dynamic
- Platform-based
- Interactive
- Augmented/virtual reality
- Game- & gadget based

Experience
- Full immersion
- Combined learning, living & teaching (TAs)
- Consistent digital theme & lifestyle

Skoltech 3.0: A disruptive, distributed network of programs linked together and always on real-time demand that manages and tracks assets (digital natives) as they move along education, research and innovation supply chain.

SkT Center for Electrochemical Energy Storage

Oil and Gas consumption degrades the environment and exhausts a critical RF resource.



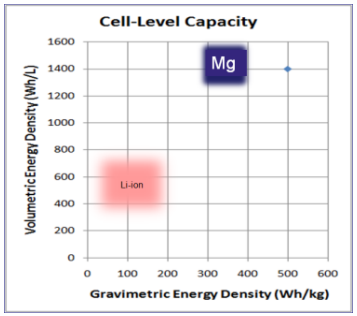
World Energy Consumption

Electrochemical energy storage provides efficient use of fossil fuels and commercial opportunities.

- Grid-level power shaping and time shifting
- Energy buffering for intermittent alternative energy sources
- Transportation and mobile devices

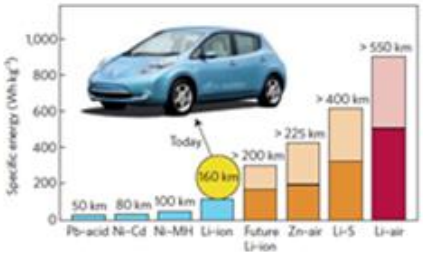
Current electrochemical energy storage technology can not meet these needs, but there are known solutions.

Advanced Metal Ion Batteries



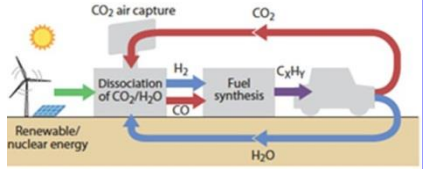
Mg^{+2} vs. Li^{+1}: 4-fold increase in capacity and density.

Rechargeable Metal-air Batteries



Li-ion vs. Li-air: 3-fold increase.

Solar, Fuel and Electrolysis Cells



Efficiency improvements for stationary and mobile applications.

Flow batteries

Suspension-based approaches Li-ion; with low cost, long life, safety, and flexibility.

Current Team

Leadership

Keith STEVENSON, CREI Director, Professor

Previous Position: Professor of Chemistry at The University of Texas at Austin, USA

Artem ABAKUMOV, Professor

Previous Position: Research Leader at University of Antwerp, Belgium

Pavel TROSHIN, Associate Professor

Previous Position: Head of Lab at Institute for Problems of Chemical Physics of RAS, Russia

Andriy ZHUGAYEVYCH, Assistant Professor

Previous Position: Researcher at Los Alamos National Laboratory, USA

Alexei BUCHACHENKO, Professor

Previous Position: Professor of Physical Chemistry at Moscow State University, Russia

Sergey TRETIAK, Professor

Previous Position: Scientist at Center for Integrated Nanotechnologies, USA

Arterm Oganov, Professor

Research Staff

Research Scientists:

Dr. Alexander Ivanishchev

Dr. Oleg Drozhzhin

Dr. Sergey Luchkin

Dr. Maria Kirsanova

Dr. Irina Klimovich

Dr. Dmitry Bezrukov

Dr. Svetlana Lipovskikh

Dr. Dmitry Aksenov

Dr. Dmitry Rupasov

Dr. Artem Semakin

Dr. Sergey Tsarev

Dr. Moneim Ismail

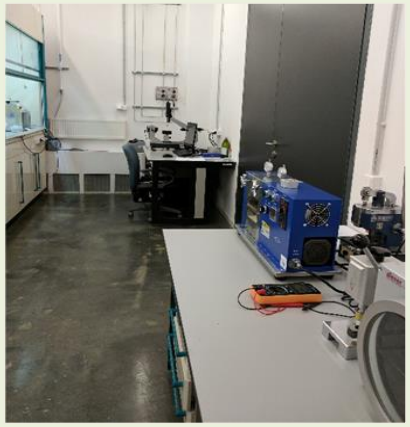
Dr. Vishweshvar Sivasankaran

State of the Art Research Facilities @ Skoltech

Battery prototyping

Solar cells fabrication and in-situ characterization

Cell assembling/
Structure characterization



Cell assembling

Material processing lab

Electrochemistry Analytical lab

Modern Materials Science MS Program

Full time: 2 years

The core aspects of the program are: project-based learning; multidisciplinary approach; industry immersion; entrepreneurship and innovation component

The curriculum of the program provides a broad and integrated overview of materials science and the opportunity for in-depth study of a particular problem emphasizing theory, experimentation, and technology under the guidance of a research supervisor

Academic & Industrial Partners: MIT, MSU, MIPT, Mendeleev University of Chemical Technology, LANL, IPCP RAS, SMA, Nissan

Massachusetts Institute of Technology

MSU

MIPT MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY

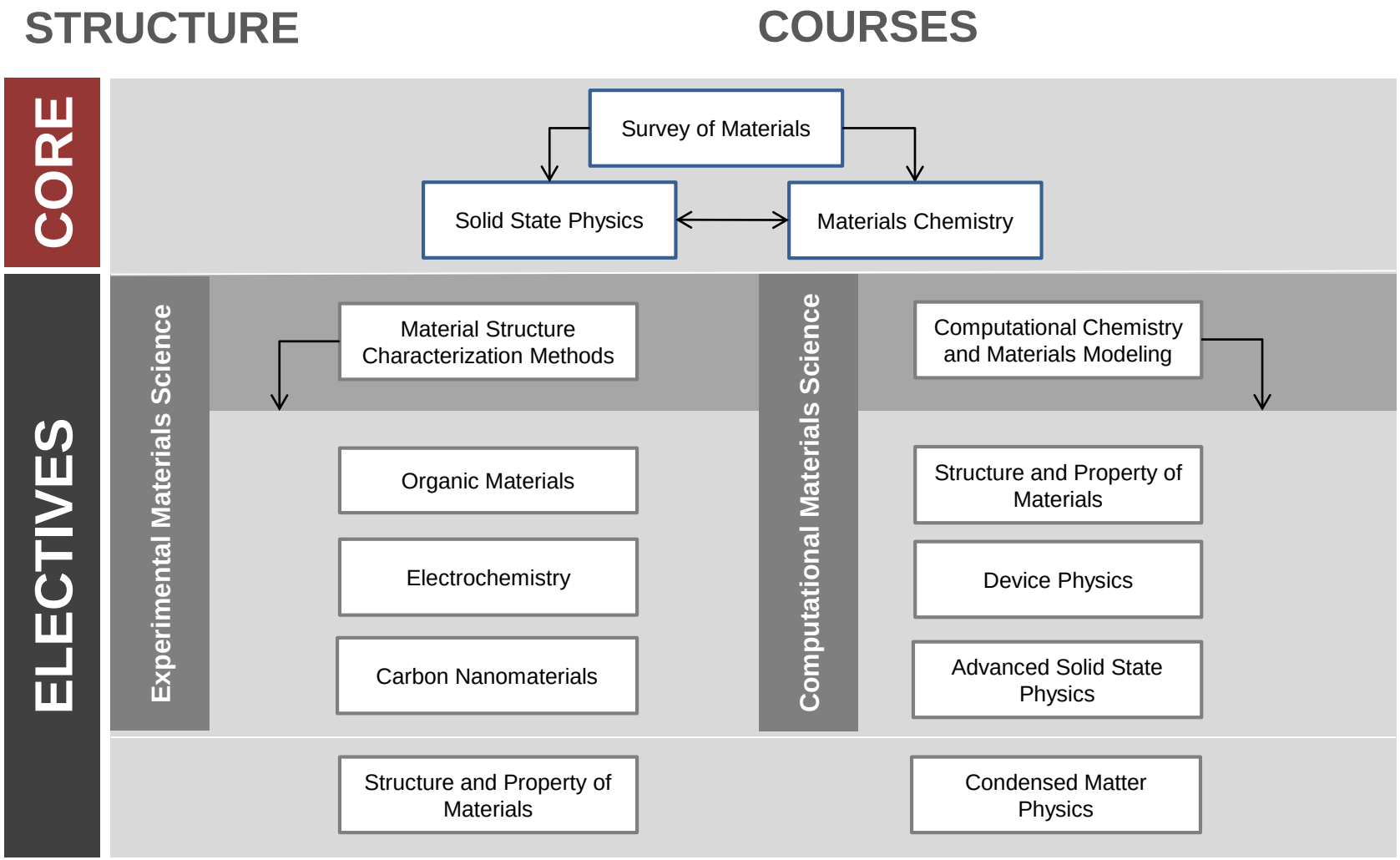
Los Alamos NATIONAL LABORATORY EST.1943

IPCP RAS

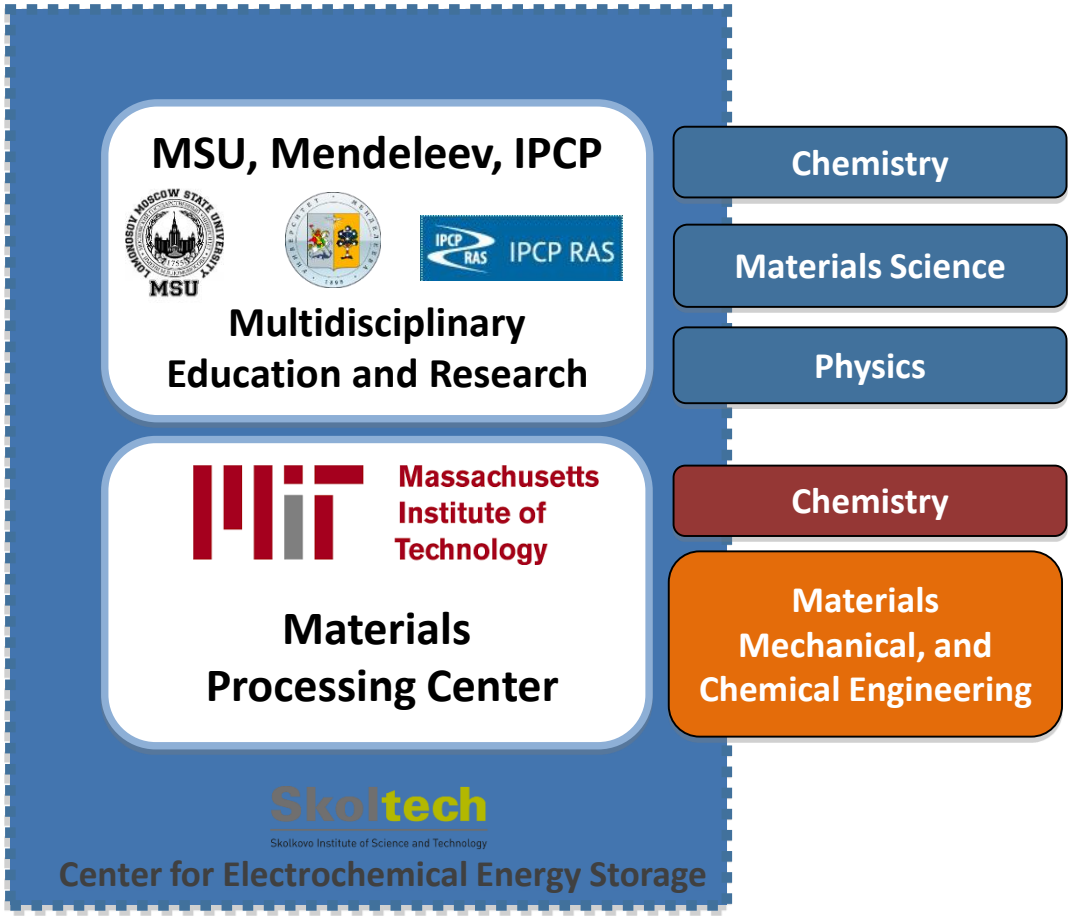
SMA NISSAN

crei.skoltech.ru/cee/education

Materials Science Program Structure



Integration of Research, Education and Innovation



Fill need for qualified personnel for the modern energy storage industry emerging in Russia

MS & PhD @ SkolTech

Joint programs with partners (MS and PhD)

Enabling new technologies and start-ups for emerging market niches