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Scientific employee  
MOBI - Electromobility Research Centre  
Electrical Engineering and Power Electronics  
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## Employment

### **MOBI - Electromobility Research Centre**

Vrije Universiteit Brussel  
Brussels, Belgium  
1 Jan 2023 → present

### **Scientific employee**

Electrical Engineering and Power Electronics  
Vrije Universiteit Brussel  
Brussels, Belgium  
1 Aug 2019 → 31 Dec 2025

### **Research Assistant**

Eskisehir Technical University  
Turkey  
31 Aug 2001 → 31 Dec 2023

## Research outputs

### **Advancing Cobalt-Free Lithium-Ion Batteries through Electrochemical Model Refinement and Experimental Parametrization of LNMO|Gr Cells with Gel Polymer Electrolytes**

Daems, K., Román, V., de Meatza, I., Ayerbe, E., Dermenci, K. B., Van Mierlo, J. & Berecibar, M., Sep 2024, In: Batteries & Supercaps. 7, 9, 9 p., e202400162.

### **Advances in inorganic, polymer and composite electrolytes: Mechanisms of Lithium-ion transport and pathways to enhanced performance**

Daems, K., Yadav, P., Dermenci, K. B., Mierlo, J. V. & Berecibar, M., Mar 2024, In: Renewable and Sustainable Energy Reviews. 191, 19 p., 114136.

### **A critical review of future aspects of digitalization next generation Li-ion batteries manufacturing process**

Dammala, P. K., Dermenci, K. B., Kathribail, A. R., Yadav, P., Van Mierlo, J. & Berecibar, M., 25 Dec 2023, In: Journal of Energy Storage. 74, PartB, p. 1-21 21 p., 109209.

### **Lithium-Ion Battery Manufacturing: Industrial View on Processing Challenges, Possible Solutions and Recent Advances**

Orum Aydin, A., Zajonz, F., Gunther, T., Dermenci, K. B., Berecibar, M. & Urrutia, L., Nov 2023, In: Batteries. 9, 11, p. 1-29 29 p., 555.

### **A Review on Digitalization Approaches for Battery Manufacturing Processes**

Dermenci, K. B., Dammala, P. K., Yadav, P., Kathribail, A. R., Van Mierlo, J. & Berecibar, M., 9 Oct 2022, In: ECS Meeting Abstracts. MA2022-02, 6, p. 601-601 1 p.

### **Electrochemical parameterization of commercial activated carbons as anodes for high-power Li-ion batteries**

Dermenci, K. B., Daems, K., Güner, Y., Turan, S., Van Mierlo, J. & Berecibar, M., Jun 2022, In: Journal of Materials Science: Materials in Electronics. 33, 16, p. 13064-13074 11 p.

**Improved Li-Ion conduction by ion-conductor  $\text{Li}_{1.5}\text{Al}_{0.5}\text{Ge}_{1.5}(\text{PO}_4)_3$  additive in garnet type  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$  solid electrolytes**

Dermenci, K. B., Apr 2022, In: Materials Chemistry and Physics. 281, 7 p., 125910.

**Production of chlorine-containing functional group doped graphene powders using Yucel's method as anode materials for Li-ion batteries**

Gursu, H., Guner, Y., Arvas, M. B., Dermenci, K. B., Savaci, U., Gencten, M., Turan, S. & Sahin, Y., 16 Dec 2021, In: RSC Advances. 11, 63, p. 40059-40071 13 p.

**Thermokinetic and thermodynamics of Pechini derived  $\text{Li}_{7-3x}\text{Al}_x\text{La}_3\text{Zr}_2\text{O}_{12}$  ( $X = 0.0-0.2$ ) xerogel decomposition under oxidative conditions**

Özsin, G., Dermenci, K. B. & Turan, S., 5 Nov 2021, In: Journal of Thermal Analysis and Calorimetry. 146, p. 1405-1420 16 p.

**Lanthanide doping of  $\text{Li}_7\text{La}_3\text{-xM}_x\text{Zr}_2\text{O}_{12}$  ( $M=\text{Sm, Dy, Er, Yb; } x=0.1-1.0$ ) and dopant size effect on the electrochemical properties**

Abdulai, M., Dermenci, K. B. & Turan, S., Jun 2021, In: Ceramics International. 47, 12, p. 17034-17040 7 p.

**Solution combustion synthesis and electrochemical properties of yttrium-doped  $\text{LiMnPO}_4/\text{C}$  cathode materials for lithium ion batteries**

El Khalfaouy, R., Turan, S., Rodriguez, M. A., Dermenci, K. B., Savaci, U., Addaou, A., Laajeb, A. & Lahsini, A., 1 Sep 2020, In: Journal of Rare Earths. 38, 9, p. 976-982 7 p.

**A novel densification model for sintering  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ -based solid electrolytes for all solid-state Li-ion batteries**

Dermenci, K. B., 9 Jul 2020, In: Ionics. 26, 9, p. 4757-4762 6 p.

**Electrochemical properties of ZnO anode materials with MicNo® morphology**

Dermenci, K. B., Yanik, T., Dağ, S., Suvaci, E., Kesim, M. T., Savaci, U. & Turan, S., 6 Jul 2020, In: International Journal of Applied Ceramic Technology. 17, 4, p. 1882-1890 9 p.

**A novel green and one-step electrochemical method for production of sulfur-doped graphene powders and their performance as an anode in Li-ion battery**

Dermenci, K. B., 1 Jul 2020, In: Ionics. 26, p. 4909-4919 11 p.

**Comparison of xenon and gallium sources on the detection and mapping of lithium in Li-containing materials by using ToF-SIMS combined FIB-SEM**

K.B., DERMENCI., H., TESAŘOVÁ., T., ŠAMOŘIL. & S., TURAN., 19 Dec 2019, In: Journal of Microscopy. 277, 1, p. 42-48 7 p.

**The effect of limonite addition on the performance of  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$**

Dermenci, K. B., 1 Dec 2019, In: Ceramics International. 45, 17, p. 21401-21408 8 p.

**Nickel-substituted  $\text{LiMnPO}_4/\text{C}$  olivine cathode material: Combustion synthesis, characterization and electrochemical performances**

Dermenci, K. B., EL Khalfaouy, R., Turan, S., Savaci, U., Addaou, A., Laajeb, A. & Lahsini, A., 1 Oct 2019, In: Ceramics International. 45, 14, p. 17688-17695

**Preparation of N-doped graphene powders by cyclic voltammetry and a potential application of them: Anode materials of Li-ion batteries**

Dermenci, K. B., 10 Jun 2019, In: International Journal of Energy Research. 43, 10, p. 5346-5354 9 p.

**Achieving high performance for aluminum stabilized  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$  solid electrolytes for all solid-state Li-ion batteries: A thermodynamic point of view**

Dermenci, K. B. & Turan, S., 18 Jan 2019, In: Energy research journal. 43, 1, p. 141-149 9 p.

**Mesoporous nanocrystalline ZnO microspheres by ethylene glycol mediated thermal decomposition**

Alp, E., Araz, E. C., Buluç, A. F., Güner, Y., Değer, Y., Eşgin, H., Dermenci, K. B., Kazmanlı, M. K., Turan, S. & Genç, A., 1 Dec 2018, In: *Advanced Powder Technology*. 29, 12, p. 3455-3461 7 p.

**Structural insights on understanding the cubic phase stabilization mechanism of sol-gel synthesized  $\text{Li}_7\text{-}3x\text{Al}_x\text{La}_3\text{Zr}_2\text{O}_{12}$  ( $x=0\text{-}0.4$ )—The effect of  $\text{ZrOCl}_2$  and  $\text{ZrO}(\text{NO}_3)_2$**

Dermenci, K. B. & Turan, S., 1 Jul 2018, In: *Ceramics International*. 44, 10, p. 11852-11857 6 p.

**Al stabilized  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$  solid electrolytes for all-solid state Li-ion batteries**

Dermenci, K. B., Çekiç, E. & Turan, S., 22 Jun 2016, In: *International Journal of Hydrogen Energy*. 41, 23, p. 9860-9867 8 p.

**Effect of cathode slurry composition on the electrochemical properties of Li-ion batteries**

Dermenci, K. B., Turan, S., Behm, M. & Lindbergh, G., 7 Aug 2015, *ECS Transactions*. IOP Publishing Ltd., Vol. 66. p. 285 1 p.

**Photocatalytic studies of Ag/ZnO nanocomposite particles produced via ultrasonic spray pyrolysis method**

Dermenci, K. B., Genc, B., Ebin, B., Olmez-Hanci, T. & Gürmen, S., 15 Feb 2014, In: *Journal of Alloys and Compounds*. 586, p. 267-273 13 p.

## Awards

**EUAR40: H2020 - BAT4EVER - Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries**

Berecibar, M., Van Mierlo, J., Messagie, M., Dermenci, K. B. & Lavigne Philippot, M.

1/09/20 → 29/02/24

## Projects

**EUAR40: H2020 - BAT4EVER - Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries**

Van Mierlo, J., Messagie, M., Dermenci, K. B., Lavigne Philippot, M. & Berecibar, M.

1/09/20 → 29/02/24

**EUAR141: PHOENIX : Building more reliable and performant batteries by embedding sensors and self-healing functionalities to detect degradation and repair damage via advanced Battery Management System**

Berecibar, M., Dermenci, K. B. & Lavigne Philippot, M.

1/05/23 → 30/04/27

## Teaching Experience

2018-2019      Metallic Materials

2018-2019      Materials Thermodynamics I & II