

# RSC Sustainability

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## IN THIS ISSUE

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### Cover

See Muhammad Anwar, Sarim Dastgir *et al.*, pp. 3724–3840. Image reproduced by permission of VezTek, a Green Global Group (G3) company, from *RSC Sustainability*, 2025, 3, 3724.



### Inside cover

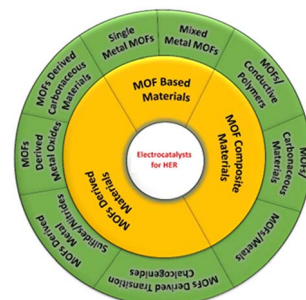
See Blake A. Simmons *et al.*, pp. 3915–3924. Image reproduced by permission of Manny Rubio from *RSC Sustainability*, 2025, 3, 3915.

## CRITICAL REVIEWS

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### Recent advances in MOFs, MOF-derived materials and their composites as electrocatalysts for hydrogen production

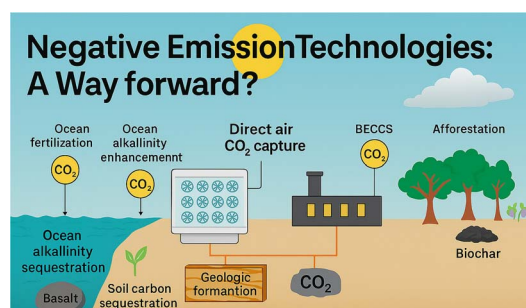
E. S. Sowbakkivavathi, Preethi Dhandapani, Senthilkumar Ramasamy, Ju Hyun Oh, Insik In, Seung Jun Lee\* and A. Subramania\*



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### Negative emission technologies: a way forward?

Haris Ishaq\* and Curran Crawford



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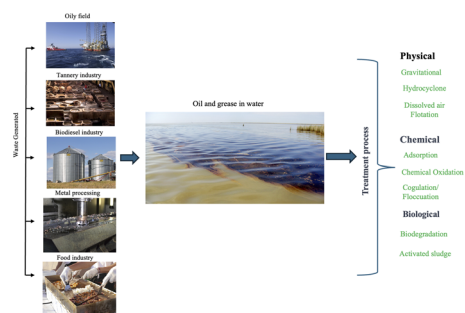
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## CRITICAL REVIEWS

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**Minimizing oil pollution: a review of current status and its treatment options**

Hansa Muvel, Manoj Kumar Jindal,\* Pradip Kumar Tewari\* and Vikky Anand\*

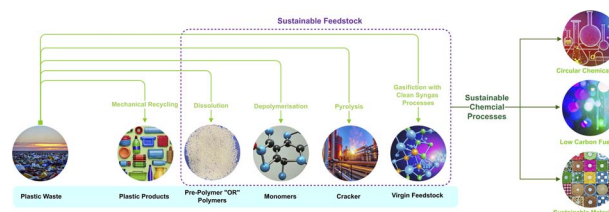


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3724

**Circular plastic economy for sustainable development: current advances and future perspectives**

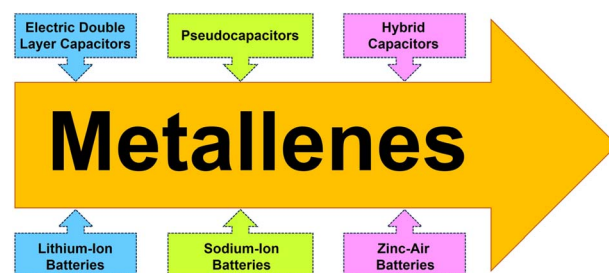
Muhammad Anwar,\* Maria E. Konnova and Sarim Dastgir\*



3841

**Ultrathin 2D metallenes for energy storage: a myth or reality?**

Jayesh Cherusseri,\* Susmi Anna Thomas and Deepthi N. Rajendran



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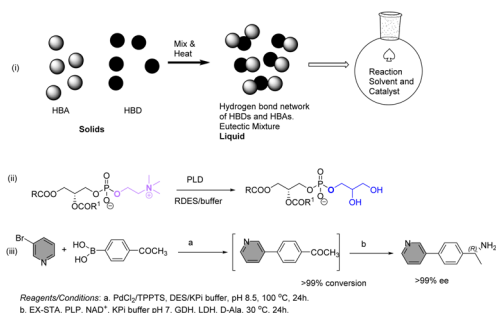
**Towards polycotton waste valorisation: depolymerisation of cotton to glucose with polyester preservation**

Nienke Leenders, Gerard P. M. van Klink and Gert-Jan M. Gruter\*



## PERSPECTIVES

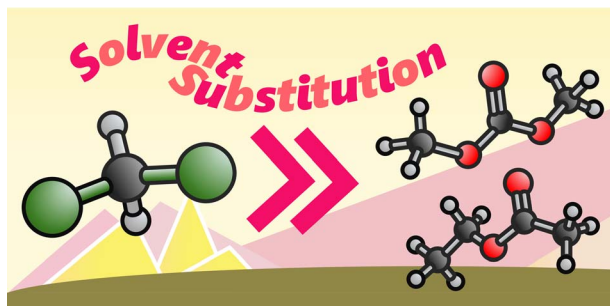
3883



## How deep eutectic solvents are currently shaping organocatalytic and enzymatic asymmetric catalysis

Anthony J. Burke,<sup>\*</sup> Elisabete P. Carreiro and Hans-Jürgen Federsel<sup>\*</sup>

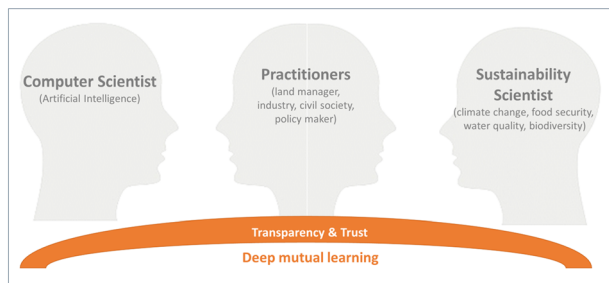
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## How do you (dis)solve a problem like methylene chloride?

James Sherwood

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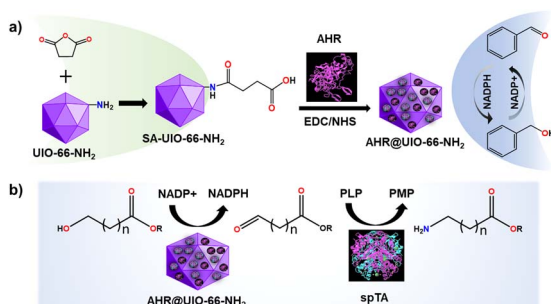


## Deep mutual learning: incentives and trust through collaborative integration of artificial intelligence into sustainability science

Johannes Lehmann,<sup>\*</sup> Carla Gomes, Matthias C. Rillig and Shashi Shekhar

## COMMUNICATION

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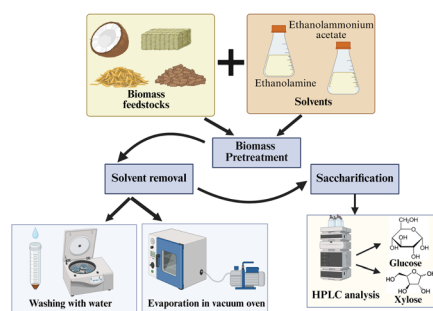
## Immobilization of aldehyde reductase for the production of bioplastic precursors from agricultural fatty acids

Devesh Mohne, Yeddula Nikhilshwar Reddy, Kshitij Rawat, Mahesh D. Patil<sup>\*</sup> and Jayeeta Bhaumik<sup>\*</sup>

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### Comparison between two different approaches for the deconstruction of lignocellulosic feedstocks using alkanolamine-based solvents

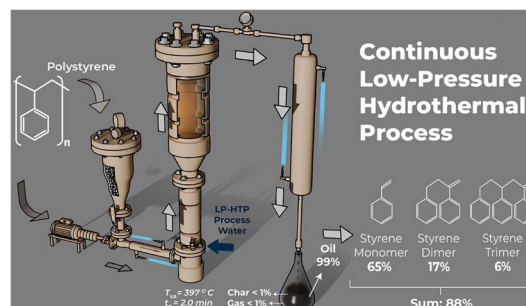
Anagha Krishnamoorthy, Venkataramana R. Pidatala, Xueli Chen, Joseph M. Palasz, Yinglei Han, Tyrell Lewis, Hemant Choudhary, Alberto Rodriguez, John M. Gladden, Chang Dou, Ning Sun and Blake A. Simmons\*



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### Continuous low-pressure hydrothermal processing methods for polystyrene conversion to oils

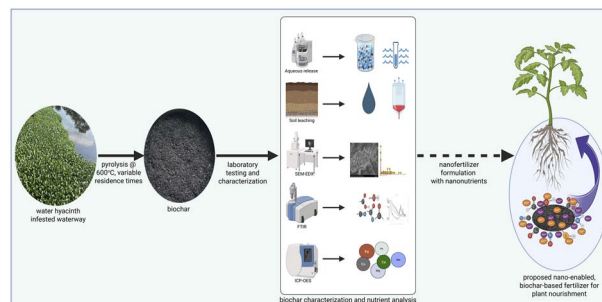
Clayton Gentilcore, Cagri Un, Josue Martinez-Maldonado, Petr Vozka and Nien-Hwa Linda Wang\*



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### Morphological and chemical profiling of biochar derived from invasive aquatic weed towards bio-nanofertilizer development

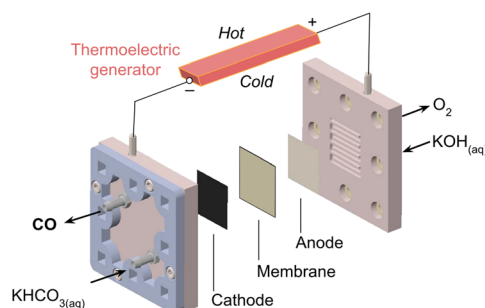
Adewale Tolulope Irewale, Elias Emeka Elemike, Paul Ehimare Aikpokpodion, Raja Muthuramalingam Thangavelu, Christian O. Dimkpa\* and Emeka Emmanuel Oguzie\*



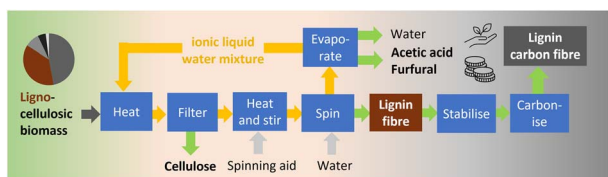
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### Thermoelectrically powered CO<sub>2</sub> conversion in a reactive carbon electrolyzer

Abhishek Soni, Siwei Ma, Giuseppe V. Crescenzo and Curtis P. Berlinguette\*



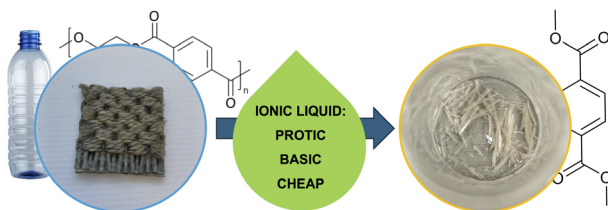
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### Sustainable low-cost carbon fibres produced by integrating wood fractionation with lignin fibre spinning

Shirley Min Yang, Rukayya Ibrahim Muazu, Enny Tran, Clifford B. Talbot, Nilay Shah, Milo S. P. Shaffer and Agnieszka Brandt-Talbot\*

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### Methanolysis of polyethylene terephthalate (PET) using non-stoichiometric protic ionic liquids

Emma McCrea, Peter Goodrich, John D. Holbrey and Małgorzata Swadźba-Kwaśny\*

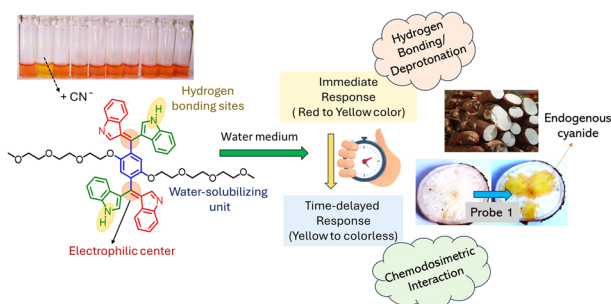
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### Chemistry inquiry conducted by secondary school students into material degradation in the context of sustainability

María Del Mar López-Fernández,\*  
María José Cano-Iglesias\*  
and Antonio Joaquín Franco-Mariscal\*

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### Oxyethylene-substituted bis-indolyl derivatives for enhanced cyanide detection: mechanistic insights and application in food safety analysis

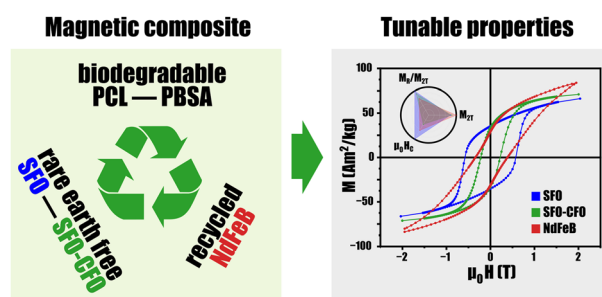
Nilanjan Dey, Subham Bhattacharjee, Namita Kumari and Santanu Bhattacharya\*



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### Eco-sustainable magnetic polymer composites using recycled and rare-earth-free hard magnetic fillers

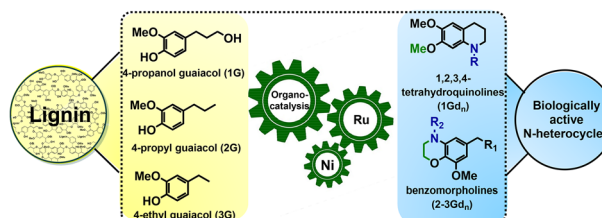
Ayda Ghary Haghghat, Eider Matxinandiarena, Manuela Zubitur, Agurtzane Mugica, Fulvio Bellato, Anna M. Ferretti, Alessandro Ponti, Souad Ammar, Maryam Abdolrahimi, Gaspare Varvaro, Pierfrancesco Maltoni, Dario Cavallo, Alexander Omelyanchik,\* Alejandro J. Müller\* and Davide Peddis\*



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### Lignin-derived guaiacols as platform chemicals for the modular synthesis of 1,2,3,4-tetrahydroquinolines and benzomorpholines

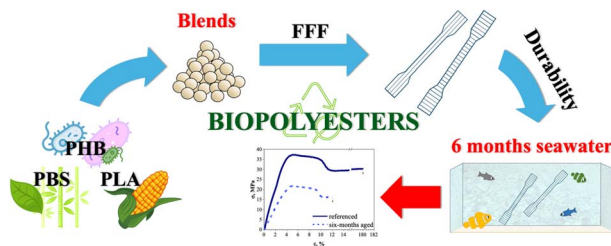
Antonio A. Castillo-Garcia, Jörg Haupenthal, Anna K. H. Hirsch and Katalin Barta\*



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### Environmental degradation and durability of bulk 3D-printed parts from biodegradable polyester blends of PBS, PLA, and PHB in seawater

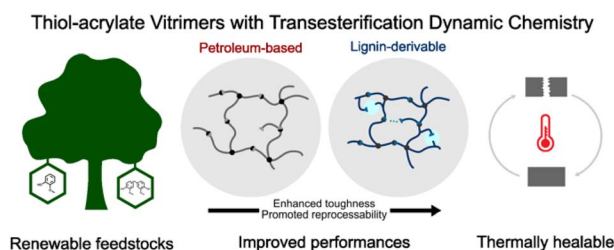
Alisa Sabalina,\* Sergejs Gaidukovs,\* Oskars Platnieks, Olesja Starkova, Gerda Gaidukova, Liga Orlova and Maksims Jurinovs



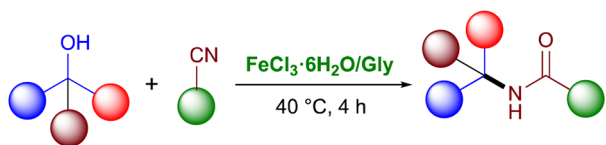
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### Lignin-derivable, thermally healable thiol-acrylate vitrimers with improved mechanical performance and reprocessability via transesterification

Yu-Tai Wong, Jignesh S. Mahajan, Stephanie Synnott and LaShanda T. J. Korley\*



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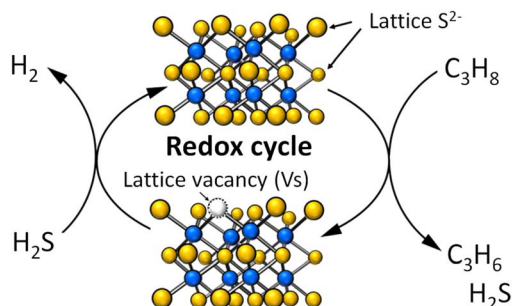


- ✓ Mild conditions
- ✓ Broad substrate scope
- ✓ No chromatography
- ✓ Up to 98% yield
- ✓ Reusable catalytic medium
- ✓ Green metrics
- ✓ Scalable methodology
- ✓ Bioactive molecule synthesis

### A sustainable twist on the Ritter reaction: iron-based deep eutectic solvents as a green route to amide synthesis

Luciana Cicco, Arfa Yousaf, Paola Vitale, Filippo Maria Perna\* and Vito Capriati\*

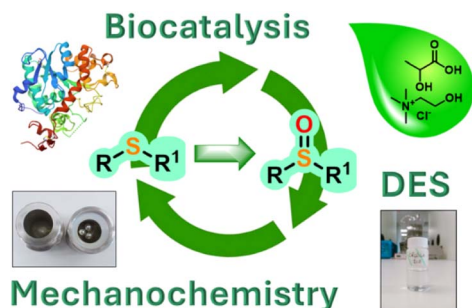
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### Redox mechanism by lattice sulphur in an Fe-based catalyst for propane dehydrogenation with H<sub>2</sub>S co-feeding

Ryo Watanabe,\* Priyanka Verma, Hiroshi Akama and Choji Fukuhara\*

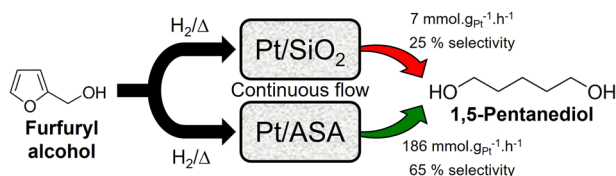
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### Mechano-enzymatic and deep eutectic solvent (DES) mediated sulfoxidation reactions: a comparison study

Amina Cheraitia, Chuhan Li, Michele Crotti, Naima Merabet and Daniele Castagnolo\*

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### Selective ring-opening of furfuryl alcohol to 1,5-pentanediol over Pt/aluminosilicates

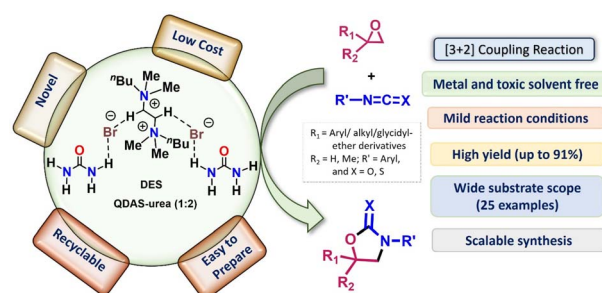
Lee J. Durndell,\* Vannia C. dos Santos-Durndell, Atal Shivhare, James A. Hunns, Karen Wilson\* and Adam F. Lee\*



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### Sustainable and efficient synthesis of oxazolidinones using a unique deep eutectic solvent (DES)

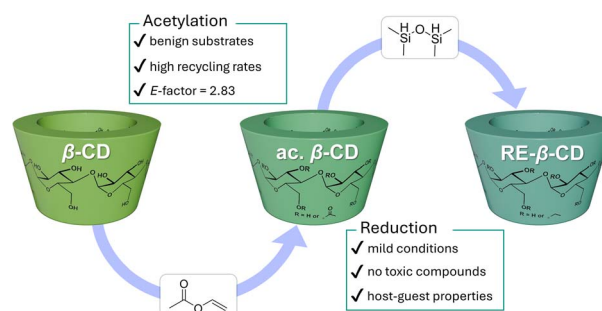
Susmita Mandal, Shiva Lall Sunar, Archana Jain\* and Tarun K. Panda\*



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### A more sustainable two-step synthesis of alkylated $\beta$ -cyclodextrin via acetylation and $GaBr_3$ -catalyzed reduction

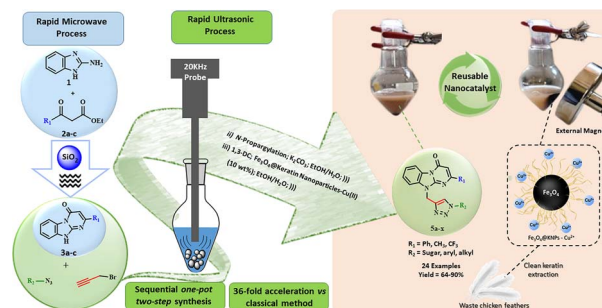
Leon J. Bartlewski, Peter Conen, Qianyu Cai, Maximilian Bürk, Dominique Armspach and Michael A. R. Meier\*



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### An $Fe_3O_4$ @keratin nanocomposite doped with copper(II): a reusable heterogeneous catalyst for the synthesis of novel 1,4-disubstituted 1,2,3-triazole-pyrimido-benzimidazoles in aqueous ethanolic solution under ultrasound cavitation

Chaimae Hourma, Mohamed Belhajja, Mohsine Driowya, Hamza Tachallait, Rachid Benhida and Khalid Bougrin\*



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### Nitro-functionalized imidazolium salts as acidic catalysts for cellulose degradation in ionic liquids

Flávia C. Sonaglio, Wellington D. G. Gonçalves, Virgínia S. Souza, Cecília A. Silveira and Jackson D. Scholten\*

