

List of Publications (Akihiro Shimizu)

Paper

- (40) PPV Polymerization via the Gilch Route: Diradical Character of Monomers
Jelena Đurđević Nikolić, Sebastian Wouters, Julia Romanova, Akihiro Shimizu, Benoit Champagne,*
Thomas. Junkers, Dirk. Vanderzande, Dimitri Van Neck, Michel Waroquier, Veronique Van Speybroeck,
Saron Catak*
Chem. Eur. J. **2015**, accepted.
- (39) Heterocyclization Approach for Electrooxidative Coupling of Functional Primary Alkylamines with Aromatics
Tatsuya Morofuji, Akihiro Shimizu, Jun-ichi Yoshida*
J. Am. Chem. Soc. **2015**, *137*, 9816–9819. DOI: [10.1021/jacs.5b06526](https://doi.org/10.1021/jacs.5b06526)
Highlighted in Spotlights on Recent JACS Publications. *J. Am. Chem. Soc.* **2015**, *137*, 10017–10017.
DOI: [10.1021/jacs.5b08475](https://doi.org/10.1021/jacs.5b08475)
- (38) Automated Electrochemical Assembly of the Protected Potential TMG-Chitotriomycin Precursor Based on Rational Optimization of the Carbohydrate Building Block
Toshiki Nokami,* Yuta Isoda, Norihiko Sasaki, Aki Takaiso, Shuichi Hayase, Toshiyuki Itoh,* Akihiro Shimizu, Ryutaro Hayashi, Jun-ichi Yoshida*
Org. Lett. **2015**, *17*, 1525–1528. DOI: [10.1021/acs.orglett.5b00406](https://doi.org/10.1021/acs.orglett.5b00406)
- (37) Switching the Reaction Pathways of Electrochemically Generated β -Haloalkoxysulfonium Ions - Synthesis of Halohydrins and Epoxides
Akihiro Shimizu, Ryutaro Hayashi, Yosuke Ashikari, Toshiki Nokami, Jun-ichi Yoshida*
Beilstein J. Org. Chem. **2015**, *11*, 242–248. DOI: [10.3762/bjoc.11.27](https://doi.org/10.3762/bjoc.11.27)
- (36) Electrochemical Intramolecular C–H Amination: Synthesis of Benzoxazoles and Benzothiazoles
Tatsuya Morofuji, Akihiro Shimizu, Jun-ichi Yoshida*
Chem. Eur. J. **2015**, *21*, 3211–3214. DOI: [10.1002/chem.201406398](https://doi.org/10.1002/chem.201406398)
Highlighted in Angew. Chem. Int. Ed. *Angew. Chem. Int. Ed.* **2015**, *54*, 6398–6399.
DOI: [10.1002/anie.201502638](https://doi.org/10.1002/anie.201502638)
- (35) Tetracyclopenta[def,jkl,pqr,vwx]tetraphenylene: A Potential Tetraradicaloid Hydrocarbon
Shunpei Nobusue, Hirokazu Miyoshi, Akihiro Shimizu, Ichiro Hisaki, Kotaro Fukuda, Masayoshi Nakano, Yoshito Tobe*
Angew. Chem. Int. Ed. **2015**, *54*, 2090–2094. DOI: [10.1002/anie.201410791](https://doi.org/10.1002/anie.201410791)
Selected as a VIP. Selected as Inside Cover. DOI: [10.1002/anie.201412137](https://doi.org/10.1002/anie.201412137)
Highlighted in ChemistryViews 28 January, 2015
- (34) Redox Active Dendronized Polystyrenes Equipped with Peripheral Triarylaminines
Toshiki Nokami, Naoki Musya, Tatsuya Morofuji, Keiji Takeda, Masahiro Takumi, Akihiro Shimizu, Jun-ichi Yoshida*
Beilstein J. Org. Chem. **2014**, *10*, 3097–3103. DOI: [10.3762/bjoc.10.326](https://doi.org/10.3762/bjoc.10.326)

- (33) Transformation of Octadehydrodibenzo[12]annulene to Benzonaphthopentalene by Successive Nucleophilic and Electrophilic Transannular Cyclizations
Shunpei Nobusue, Ayumi Yoshizaki, Masahito Miki, Hirokazu Miyoshi, Akihiro Shimizu, Yoshito Tobe*
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- (32) Introduction of Two Lithiooxycarbonyl Groups Enhances Cyclability of Lithium Batteries with Organic Cathode Materials
Akihiro Shimizu, Hiroki Kuramoto, Yutaka Tsujii, Toshiki Nokami, Yuu Inatomi, Nobuhiko Hojo, Hirotetsu Suzuki, Jun-ichi Yoshida*
J. Power Sources **2014**, 260, 211–217. DOI: [10.1016/j.jpowsour.2014.03.027](https://doi.org/10.1016/j.jpowsour.2014.03.027)
- (31) Direct C–N Coupling of Imidazoles with Aromatic and Benzylic Compounds via Electrooxidative C–H Functionalization
Tatsuya Morofuji, Akihiro Shimizu, Jun-ichi Yoshida*
J. Am. Chem. Soc. **2014**, 136, 4496–4499. DOI: [10.1021/ja501093m](https://doi.org/10.1021/ja501093m)
Highlighted in Spotlights on Recent JACS Publications. *J. Am. Chem. Soc.* **2014**, 136, 5179–5180. DOI: [10.1021/ja503143p](https://doi.org/10.1021/ja503143p)
- (30) Nitrogen-Containing Polycyclic Quinones as Cathode Materials for LIB with Improved Voltage
Akihiro Shimizu, Yutaka Tsujii, Hiroki Kuramoto, Toshiki Nokami, Yuu Inatomi, Nobuhiko Hojo, Jun-ichi Yoshida*
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- (29) Benz[c]indeno[2,1-*a*]fluorene: A 2,3-Naphthoquinodimethane Incorporated into an Indenofluorene Frame
Hirokazu Miyoshi, Shunpei Nobusue, Akihiro Shimizu, Ichiro Hisaki, Mikiji Miyata, Yoshito Tobe*
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- (28) Synthesis and Physical Properties of Zethrene Derivatives Bearing Donor/Acceptor Substituents at 7,14-Positions
Daijiro Hibi, Kenichi Kitabayashi, Akihiro Shimizu, Rui Umeda, Yoshito Tobe*
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- (27) Halogen and Chalcogen Cation Pools Stabilized by DMSO. Versatile Reagents for Alkene Difunctionalization
Yosuke Ashikari, Akihiro Shimizu, Toshiki Nokami, Jun-ichi Yoshida*
J. Am. Chem. Soc. **2013**, 135, 16070–16073. DOI: [10.1021/ja4092648](https://doi.org/10.1021/ja4092648)
- (26) Automated Solution-Phase Synthesis of Oligosaccharides via Iterative Electrochemical Assembly of Thioglycosides
Toshiki Nokami,* Ryutaro Hayashi, Yoshihiro Saigusa, Akihiro Shimizu, Chih-Yueh Liu, Kwok-Kong Tony Mong, Jun-ichi Yoshida*
Org. Lett. **2013**, 15, 4520–4523. DOI: [10.1021/ol402034g](https://doi.org/10.1021/ol402034g)
- (25) Indeno[2,1-*b*]fluorene: A 20- π -Electron Hydrocarbon with Very Low-Energy Light Absorption
Akihiro Shimizu, Ryohei Kishi, Masayoshi Nakano, Daisuke Shiomi, Kazunobu Sato, Takeji Takui, Ichiro Hisaki, Mikiji Miyata, Yoshito Tobe*

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- (24) Electrochemical C–H Amination: Synthesis of Aromatic Primary Amines via *N*-Arylpyridinium Ions

Tatsuya Morofuji, [Akihiro Shimizu](#), Jun-ichi Yoshida*

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- (23) Oxidative Cyclodimerization After Tandem Cyclization of Dehydrobenzo[14]annulenes Induced by Alkylolithium

Syunpei Nobusue, [Akihiro Shimizu](#), Kenji Hori, Ichiro Hisaki, Mikiji Miyata, Yoshito Tobe*

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- (22) Polymer-Bound Pyrene-4,5,9,10-tetraone for Fast-Charge and-Discharge Lithium-Ion Batteries with High Capacity

Toshiki Nokami, Takahiro Matsuo, Yuu Inatomi, Nobuhiko Hojo, Takafumi Tsukagoshi, Hiroshi Yoshizawa, [Akihiro Shimizu](#), Hiroki Kuramoto, Kazutomo Komae, Hiroaki Tsuyama, Jun-ichi Yoshida*

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- (21) Metal- and Chemical-Oxidant-Free C–H/C–H Cross-Coupling of Aromatic Compounds: The Use of Radical-Cation Pools

Tatsuya Morofuji, [Akihiro Shimizu](#), Jun-ichi Yoshida*

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- (20) Aromaticity and π -Bond Covalency: Prominent Intermolecular Covalent Bonding Interaction of a Kekulé Hydrocarbon with Very Significant Singlet Biradical Character

[Akihiro Shimizu](#), Yasukazu Hirao, Kouzou Matsumoto, Hiroyuki Kurata, Takashi Kubo,* Mikio Uruichi, Kyuya Yakushi

Chem. Commun. **2012**, 48, 5629–5631. DOI: [10.1039/C2CC31955A](https://doi.org/10.1039/C2CC31955A)

- (19) Singlet Open-Shell Character of Conjugated Kekulé Molecules

Takashi Kubo,* Mitsuya Aoba, [Akihiro Shimizu](#), Yasukazu Hirao, Kouzou Matsumoto, Hiroyuki Kurata, Masayoshi Nakano.

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- (18) Theoretical Aspects on the Evaluation and Interpretation of the Third-Order Nonlinear Optical Properties of Diradical Compounds

Benoît Champagne,* Edith Botek, [Akihiro Shimizu](#), Takashi Kubo,* Kenji Kamada, Koji Ohta,* Ryohei Kishi, Hitoshi Fukui, Hideaki Takahashi, Masayoshi Nakano*

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- (17) Theoretical Consideration of Singlet Open-Shell Character of Polyperiacenes Using Clar's Aromatic Sextet Valence Bond Model and Quantum Chemical Calculations

[Akihiro Shimizu](#), Yasukazu Hirao, Takashi Kubo, Masayoshi Nakano, Edith Botek, Benoît Champagne*

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Takashi Kubo,* Yoshiki Katada, [Akihiro Shimizu](#), Yasukazu Hirao, Kazunobu Sato, Takeji Takui, Mikio Uruichi, Kyuya Yakushi, Robert C. Haddon*
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Kaname Kanai,* Yukiko Noda, Keita Kato, Takashi Kubo, Kai Iketaki, [Akihiro Shimizu](#), Yukio Ouchi, Kazuhiro Nakasuji, Kazuhiko Seki
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[Akihiro Shimizu](#), Takashi Kubo,* Mikio Uruichi, Kyuya Yakushi, Masayoshi Nakano, Daisuke Shiomi, Kazunobu Sato, Takeji Takui, Yasukazu Hirao, Kouzou Matsumoto, Hiroyuki Kurata, Yasushi Morita, Kazuhiro Nakasuji
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Tsun-Cheng Wu, Chia-Hua Chen, Daijiro Hibi, [Akihiro Shimizu](#), Yoshito Tobe, Yao-Ting Wu*
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- (11) Synthesis and Characterization of Teranthene: A Singlet Biradical Polycyclic Aromatic Hydrocarbon Having Kekulé Structures
Akihito Konishi, Yasukazu Hirao, Masayoshi Nakano, [Akihiro Shimizu](#), Edith Botek, Benoît Champagne,* Daisuke Shiomi, Kazunobu Sato, Takeji Takui, Kouzou Matsumoto, Hiroyuki Kurata, Takashi Kubo*
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- (10) Signature of Multiradical Character in Second Hyperpolarizabilities of Rectangular Graphene Nanoflakes
Hiroshi Nagai, Masayoshi Nakano,* Kyohei Yoneda, Ryohei Kishi, Hideaki Takahashi, [Akihiro Shimizu](#), Takashi Kubo, Kenji Kamada, Koji Ohta, Edith Botek, Benoît Champagne
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Kyohei Yoneda, Masayoshi Nakano,* Ryohei Kishi, Hideaki Takahashi, Akihiro Shimizu, Takashi Kubo, Kenji Kamada, Koji Ohta, Benoît Champagne, Edith Botek
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Akihiro Shimizu, Mikio Uruichi, Kyuya Yakushi, Hiroyuki Matsuzaki, Hiroshi Okamoto, Masayoshi Nakano, Yasukazu Hirao, Kouzou Matsumoto, Hiroyuki Kurata, Takashi Kubo*
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Kai Iketaki,* Kaname Kanai, Akihiro Shimizu, Takashi Kubo, Zhi-Hong Wang, Yukio Ouchi, Yasushi Morita, Kazuhiro Nakasuji, Kazuhiko Seki
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- (5) Theoretical Study of Third-Order Nonlinear Optical Properties in Square Nanographenes with Open-Shell Singlet Ground States
Masayoshi Nakano,* Hiroshi Nagai, Hitoshi Fukui, Kyohei Yoneda, Ryohei Kishi, Hideaki Takahashi, Akihiro Shimizu, Takashi Kubo, Kenji Kamada, Koji Ohta, Benoît Champagne, Edith Botek
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- (4) Ambipolar Organic Field-Effect Transistors Based on a Low Band Gap Semiconductor with Balanced Hole and Electron Mobilities
Masayuki Chikamatsu, Takefumi Mikami, Jiro Chisaka, Yuji Yoshida, Reiko Azumi, Kiyoshi Yase, Akihiro Shimizu, Takashi Kubo, Yasushi Morita, Kazuhiro Nakasuji
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- (2) Singlet Biradical Character of Phenalenyl-Based Kekulé Hydrocarbon with Naphthoquinoid Structure
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- (1) Synthesis, Intermolecular Interaction, and Semiconductive Behavior of a Delocalized Singlet Biradical Hydrocarbon
Takashi Kubo,* Akihiro Shimizu, Maki Sakamoto, Mikio Uruichi, Kyuya Yakushi, Masayoshi Nakano, Daisuke Shiomi, Kazunobu Sato, Takeji Takui, Yasushi Morita, Kazuhiro Nakasuji*
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- (5) Reaction Integration Using Electrogenerated Cationic Intermediates
Jun-ichi Yoshida,* Akihiro Shimizu, Yosuke Ashikari, Tatsuya Morofuji, Ryutaro Hayashi, Toshiki Nokami, Aiichiro Nagaki
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- (4) Non-Alternant Non-Benzenoid Kekulenes: Birth of a New Kekulene Family
Hirokazu Miyoshi, Shunpei Nobusue, Akihiro Shimizu, Yoshito Tobe*
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- (3) Indenofluorene Congeners: Biradicaloids and Beyond
Akihiro Shimizu, Shunpei Nobusue, Hirokazu Miyoshi, Yoshito Tobe*
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- (2) Experimental Consideration on Covalent Bonding Interactions in Stacks of Singlet Biradicals Having Kekulé Structures
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- (1) Chemistry of Phenalenyl-Based Delocalized Singlet Biradicals
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Book

- (1) Singlet Open-Shell Character of Polyperiacenes
Akihiro Shimizu, Akihito Konishi, Yasukazu Hirao, Takashi Kubo. In *Graphene and its Fascinating Attributes*; Swapan, P.; Enoki, T.; Rao, C. N. R. Eds.; World Scientific Publisher: Place of Publication, 2011; Chapter 3, pp 46–57.

解説記事

- (2) キノンを基本骨格とする正極活物質を用いる有機二次電池
清水 章弘, 野上敏材, 吉田 潤一
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- (1) レアメタルからの脱却 – o-キノン構造をもつ有機リチウムイオン二次電池
清水 章弘, 吉田 潤一
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Patent

- (2) 光起電力素子用化合物、光起電力素子用材料および光起電力素子
戸部 義人, 信末 俊平, 清水 章弘, 北澤 大輔, 山本 修平
特願 2013-035113, 2013.2.25 出願
- (1) 二光子吸収材料
中野 雅由, 久保 孝史, 鎌田 賢司, 太田 浩二, 山口 兆, 中筋 一弘, 森田 靖, 岸 亮平, 清水 章

弘

特開 2007-77091

依頼・招待講演

- (3) 活性種の安定化に基づく有機電子移動化学

清水 章弘

平成 27 年度 第 1 回 光エネルギーセミナー，近畿大学，2015 年 5 月 9 日，招待講演

- (2) 量子化学計算を用いた二次電池有機正極材料の設計と開発

○清水 章弘，辻井 豊，倉本 拓樹，野上 敏材，稲富 友，北條 伸彦，鈴木 拓哲，吉田 潤一
2014 年電気化学秋季大会，北海道大学，2014 年 9 月 27 日，招待講演

- (1) 1,2-ジケトンの基本構造とするリチウムイオン二次電池正極用有機レドックスポリマーの開発

○清水 章弘・倉本 拓樹・辻井 豊・野上 敏材・吉田 潤一

第 62 回高分子討論会，金沢大学，2013 年 9 月 13 日，依頼講演