



オープンアクセスを利用した学術論文の公開：自然科学分野におけるプレプリントサーバーと機関リポジトリの役割について

内野, 隆司

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オープンアクセスを利用した学術論文の公開

自然科学分野におけるプレプリントサーバーと機関リポジトリの役割について

神戸大学 大学院理学研究科 化学専攻

教授 内野 隆司

自己紹介

学歴

1992年3月 京都大学大学院工学研究科 博士後期課程 工業化学専攻 研究指導認定退学
1993年1月 京都大学博士（工学）取得

研究歴

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1995年4月 京都大学 化学研究所 助手
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文部省在外研究員，日本学術振興会海外派遣研究員（1999年3月まで）
1999年4月 京都大学 化学研究所 助教授

2002年2月 神戸大学理学部 化学科 助教授
2007年4月 神戸大学大学院理学研究科 化学専攻 准教授
2010年4月 神戸大学大学院理学研究科 化学専攻 教授

専門分野

無機材料化学 ： 光学材料，半導体材料，超伝導材料 の合成と物性解析

オープンアクセスとの出会い 1 : arXiv (1990年代半ば) (物理, 数学分野のプレプリントサーバー)



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資料 2

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Condensed Matter > Superconductivity

[Submitted on 18 Sep 2022 (v1), last revised 5 Oct 2022 (this version, v2)]

Strong phase coherence and vortex matter in a fractal system with proximity-induced superconductivity

Nanami Teramachi, Aoi Hashimoto, Iku Nakaaki, Shuuichi Ooi, Minoru Tachiki, Shunichi Arisawa, Yusuke Seto, Takahiro Sakurai, Hitoshi Ohta, Jaroslav Valenta, Naohito Tsujii, Takao Mori, Takashi Uchino

The proximity effect in normal/superconductor heterostructures is an intriguing phenomenon in that the normal side takes on the properties of a superconductor with an induced gap. However, the structural and pinning properties of vortices inside the normal regions remain poorly understood. Here, we report structure and superconducting properties of a proximity-coupled

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Abstract. We investigate vortex matter in a proximity-coupled M



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PHYSICAL REVIEW B **108**, 155146 (2023)

Strong phase coherence and vortex matter in a fractal system with proximity-induced superconductivity

Nanami Teramachi,¹ Iku Nakaaki,¹ Aoi Hashimoto,¹ Shuuichi Ooi²,² Minoru Tachiki², Shunichi Arisawa³,
Yusuke Seto⁴, Takahiro Sakurai⁵, Hitoshi Ohta⁶, Jaroslav Valenta², Naohito Tsujii²,
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(Received 5 October 2022; revised 29 August 2023; accepted 10 October 2023; published 26 October 2023)

We investigate vortex matter in a proximity-coupled Mg/MgO/MgB₂ nanocomposite with ~30 vol. % of MgB₂ using magneto-optical imaging, scanning superconducting quantum interface device microscopy, and pinning-force analysis. This nanocomposite was prepared by spark plasma sintering (SPS) of the MgO/MgO/MgB₂ mixture powders obtained from a solid-phase reaction between Mg and B₂O₃ [Uchino *et al.*, *Phys. Rev. B* **101**, 035146 (2020)]. The resulting nanocomposite is characterized by scale-free (or fractal) distributions of MgB₂ components and the atomically clean MgO/MgB₂ interfaces. It is also found that high SPS temperature (1200 °C) is the key to improve the proximity-induced superconducting properties of the Mg/MgO/MgB₂ nanocomposite. This proximity-coupled system acts as a fully phase-coherent superconductor

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Teramachi, N; Nakaaki, I; (...); Uchino, T

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Nanami Teramachi,¹ Iku Nakaaki,¹ Aoi Hashimoto,¹ Shuuichi Ooi,² Minoru Tachiki,²
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Naohito Tsujii,² Takao Mori,^{2,7} and Takashi Uchino¹

¹ Department of Chemistry, Graduate School of Science, Kobe University, Nada, Kobe 657-8501, Japan.

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PHYSICAL REVIEW B **69**, 155409 (2004)

Microscopic structure of nanometer-sized silica particles

T. Uchino,^{1,2} A. Aboshi,¹ S. Kohara,³ Y. Ohishi,³ M. Sakashita,⁴ and K. Aoki⁴

¹Department of Chemistry, Kobe University, Nada-ku, Kobe 657-8501, Japan

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³SPRING-8, Japan Synchrotron Radiation Research Institute, Sayo, Hyogo 679-5198, Japan

⁴National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki 305-8565, Japan

(Received 5 June 2003; revised manuscript received 6 January 2004; published 12 April 2004)

We have studied the structure of nanometer-sized silica particles called fumed silica, which is a synthetic amorphous silicon dioxide produced by burning silicon tetrachloride in an oxygen-hydrogen flame, using infrared and Raman spectroscopies and a high-energy x-ray diffraction method. It has been demonstrated that the structure of fumed silica is not identical to that of the normal bulk silica glass in terms especially of the distribution of the size of silica rings. Three- and four-membered rings are more frequent in fumed silica than in the bulk silica glass. It has also been shown that the network structure of fumed silica is more flexible than that of the bulk one, probably explaining the reason why fumed silica can accommodate a large number of three- and four-membered rings in the structure.

DOI: 10.1103/PhysRevB.69.155409

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ABSTRACT

Low dimensional ZnO-based materials have drawn much attention for the past few decades due to their unique electronic and optical properties and potential applications in optoelectronic devices. In this Tutorial, we will cover the past and the latest developments in ZnO thin films and micro/nanostructures in terms of excitonic and related lasing processes. First, we give a brief overview of structural and band properties of ZnO along with the linear optical and excitonic properties. Second, we introduce a feedback mechanism for lasing in various forms of ZnO, ranging from nanoparticles to nanowires, nanodisks, and thin films. As for the feedback mechanism, detailed descriptions are given to random lasing, Fabry-Pérot lasing, and whispering gallery mode lasing. Third, we discuss possible gain mechanisms, i.e., excitonic gain and electron-hole plasma (EHP) gain, in ZnO. A special interest is also devoted to the Mott carrier density, which is a crucial parameter to distinguish between excitonic and EHP contributions to lasing. Lastly, recent developments on exciton-polariton lasers based on ZnO microcavities are introduced.

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I. INTRODUCTION

Since the first observation of ZnO thin films

ZnO has attracted renewed and growing attention from the scientific community, leading to a remarkable recent progress in the

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Atomic-Scale Observation of Moiré potential in Twisted Hexagonal Boron Nitride Layers by Electron Microscopy

14 November 2024, Version 1

Working Paper

[Rina Mishima](#), [Takuro Nagai](#), [Hiroyo Segawa](#), [Masahiro Ehara](#), [Takashi Uchino](#)

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Moiré superlattices (MSLs) are an emerging class of two-dimensional materials whose electronic states can be tuned by the twist angle between two van der Waals layers and/or the relative placement of the layers. As the

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まとめ

1. 自然科学の分野では、今後ますますプレプリントサーバーと学術論文誌への同時投稿の傾向が強まると思われる。
2. 現在はWOSなどのデータベースと、機関リポジトリとの連携が必ずしもうまくいっていないように思われる。
3. プレプリントサーバーや機関リポジトリに著者原稿を投稿する際には、投稿するジャーナルの体裁に近い原稿を投稿する方が読者には都合がよい良いように思われる。

有難うございました