

## 保障措置分析化学研究グループ

最新成果一覧(\*は、外部研究者)

原著論文：

・平成 30 年

- 1) Yamada, Yoichi\*;Kuklin, A. V.\*;Sato, Sho\*;Esaka, Fumitaka;Sumi, Naoya\*;Zhang, C.\*;Sasaki, Masahiro\*;Kwon, E.\*;Kasama, Yasuhiko\*;Avramov, P. V.\*;Sakai, Seiji\*, “Electronic structure of Li<sup>+</sup>@C<sub>60</sub>; Photoelectron spectroscopy of the Li<sup>+</sup>@C<sub>60</sub>[PF<sub>6</sub><sup>-</sup>] salt and STM of the single Li<sup>+</sup>@C<sub>60</sub> molecules on Cu(111)”, Carbon, 133, p.23-30 (2018)
- 2) Asai, Shiho;Hanzawa, Yukiko;Konda, Miki;Suzuki, Daisuke;Magara, Masaaki;Kimura, Takaumi;Ishihara, Ryo\*;Saito, Kyoichi\*;Yamada, Shinsuke\*;Hirota, Hideyuki\*, “Rapid separation of zirconium using microvolume anion-exchange cartridge for <sup>93</sup>Zr determination with isotope dilution ICP-MS”, Talanta, 185, p.98-105 (2018)

・平成 29 年

- 1) Yomogida, Takumi;Esaka, Fumitaka;Magara, Masaaki, “Chemical state and isotope ratio analysis of individual uranium particles by a combination of micro-Raman spectroscopy and secondary ion mass spectrometry”, Analytical Methods, 9(44), p.6261-6266 (2017)
- 2) Esaka, Fumitaka, “Inductively coupled plasma-mass spectrometry”, Analytical Sciences, 33(10), p.1097-1098 (2017)
- 3) 蓬田 匠;浅井 志保;佐伯 盛久\*;半澤 有希子;堀田 拓摩;江坂 文孝;大場 弘則\*;北辻 章浩, “<sup>107</sup>Pd の ICP-MS 測定のためのレーザー誘起光還元法による非接触・選択的パラジウム分離; 分離条件と Pd 回収率の関係”, 分析化学, 66(9), p.647-652 (2017)
- 4) Esaka, Fumitaka;Yasuda, Kenichiro;Suzuki, Daisuke;Miyamoto, Yutaka;Magara, Masaaki, “Analysis of plutonium isotope ratios including <sup>238</sup>Pu/<sup>239</sup>Pu in individual U-Pu mixed oxide particles by means of a combination of alpha spectrometry and ICP-MS”, Talanta, 165, p.122-127 (2017)

・平成 28 年

- 1) Miyamoto, Yutaka;Yasuda, Kenichiro;Magara, Masaaki, “Automatic sequential separation with an anion-exchange column for ultra-trace analysis of Pu, U, Th, Pb, and lanthanides in environmental samples”, Journal of Radioanalytical and Nuclear Chemistry, 309(1), p.303-308 (2016)
- 2) Esaka, Fumitaka;Nojima, Takehiro;Udone, Haruhiko\*;Magara, Masaaki;Yamamoto, Hiroyuki, “Non-destructive depth analysis of the surface oxide layer on Mg<sub>2</sub>Si with XPS and XAS”,

Surface and Interface Analysis, 48(7), p.432-435 (2016)

- 3) Esaka, Fumitaka;Magara, Masaaki, "Uranium particle identification with SEM-EDX for isotopic analysis by secondary ion mass spectrometry", Mass Spectrometry Letters, 7(2), p.41-44 (2016)
- 4) Asai, Shiho;Hanzawa, Yukiko;Konda, Miki;Suzuki, Daisuke;Magara, Masaaki;Kimura, Takaumi;Ishihara, Ryo\*;Saito, Kyoichi\*;Yamada, Shinsuke\*;Hirota, Hideyuki\*, "Preparation of microvolume anion-exchange cartridge for inductively coupled plasma mass spectrometry-based determination of  $^{237}\text{Np}$  content in spent nuclear fuel", Analytical Chemistry, 88(6), p.3149-3155 (2016)
- 5) Esaka, Fumitaka;Suzuki, Daisuke;Yomogida, Takumi;Magara, Masaaki, "Application of automated particle screening for effective analysis of individual uranium particles by thermal ionization mass spectrometry", Analytical Methods, 8(7), p.1543-1548 (2016)

・平成 27 年

- 1) Esaka, Fumitaka;Suzuki, Daisuke;Miyamoto, Yutaka;Magara, Masaaki, "Determination of plutonium isotope ratios in individual uranium-plutonium mixed particles with inductively coupled plasma mass spectrometry", Journal of Radioanalytical and Nuclear Chemistry, 306(2), p.393-399 (2015)
- 2) Miyamoto, Yutaka;Suzuki, Daisuke;Esaka, Fumitaka;Magara, Masaaki, "Accurate purification age determination of individual uranium-plutonium mixed particles", Analytical and Bioanalytical Chemistry, 407, p.7165-7173 (2015)
- 3) Lee, C.-G.\*;Suzuki, Daisuke;Esaka, Fumitaka;Magara, Masaaki;Song, K.\*, "Ultra-trace analysis of plutonium by thermal ionization mass spectrometry with a continuous heating technique without chemical separation", Talanta, 141, p.92 – 96 (2015)
- 4) Miyamoto, Yutaka;Yasuda, Kenichiro;Magara, Masaaki, "Sequential separation of ultra-trace U, Th, Pb, and lanthanides using a simple automatic system", Analyst, 140(13), p.4482 - 4488 (2015)
- 5) Nishihara, Kenji;Yamagishi, Isao;Yasuda, Kenichiro;Ishimori, Kenichiro;Tanaka, Kiwamu;Kuno, Takehiko;Inada, Satoshi;Goto, Yuichi, "Radionuclide release to stagnant water in the Fukushima-1 Nuclear Power Plant", Journal of Nuclear Science and Technology, 52(3), p.301-307 (2015)
- 6) Esaka, Fumitaka;Suzuki, Daisuke;Magara, Masaaki, "Identifying uranium particles using fission tracks and microsampling individual particles for analysis using thermal ionization mass spectrometry", Analytical Chemistry, 87(5), p.3107 - 3113 (2015)
- 7) Suzuki, Daisuke;Esaka, Fumitaka;Miyamoto, Yutaka;Magara, Masaaki, "Direct isotope ratio analysis of individual uranium-plutonium mixed particles with various U/Pu ratios by thermal ionization mass spectrometry", Applied Radiation and Isotopes, 96, p.52–56 (2015)

- 8) Esaka, Fumitaka; Suzuki, Daisuke; Miyamoto, Yutaka; Magara, Masaaki, "Plutonium age determination from  $^{240}\text{Pu}/^{236}\text{U}$  ratios in individual particles by ICP-MS without prior chemical separation", *Microchemical Journal*, 118, p.69 – 72 (2015)
- 9) Miyamoto, Yutaka; Yasuda, Kenichiro; Magara, Masaaki, "Correction: Sequential Separation of Ultra-trace U, Th, Pb, and Lanthanides using a Simple Automatic System", *Analyst*, 140, p.4720 (2015).

特許 :

- 1) 山田洋一、山本博之、大場弘則、江坂文孝、山口憲司、社本真一、横山 淳、北條喜一、"シリコン薄膜または同位体濃縮シリコン薄膜の製造方法", 特願 2007-149102, 特開 2008-303078
- 2) 李 致圭、江坂文孝、臼田重和、桜井 聰、間柄正明、井口一成、渡部和男、"フィッシュショントラック法を用いて核分裂性物質を含む粒子を検出する方法", 特願 2006-163306, 特開 2007-333456.
- 3) 李 致圭、江坂文孝、臼田重和、"核分裂性物質を含む粒子の濃縮度別検出方法", 特願 2006-196717, 特開 2008-026056.

技術報告書、Proceedings 等（平成 27 年～平成 30 年）：

- 1) 宮本 ユタカ; 安田 健一郎; 鈴木 大輔; 江坂 文孝; 間柄 正明, "IAEA 環境試料極微量プルトニウムの正確な高感度分析技術", KEK Proceedings 2017-6, p.292-298 (2017)
- 2) 飯本 武志\*; 木下 哲一\*; 坂口 綾\*; 杉原 真司\*; 高宮 幸一\*; 田上 恵子\*; 長尾 誠也\*; 別所 光太郎\*; 松村 宏\*; 三浦 太一\*; 安田 健一郎, "東京電力福島第一原子力発電所事故以降の 5 年間における環境放射能研究のとりまとめ; 「環境放射能」研究会における発表を中心にして", KEK Report 2016-3 (2017)
- 3) 宮本 ユタカ; 安田 健一郎; 間柄 正明, "環境試料の極微量多元素分離法の開発", KEK Proceedings 2015-4, p.44-48 (2015)

総説・解説・著書（平成 27 年～平成 30 年）：

- 1) 江坂 文孝, "核不拡散・核セキュリティに利用される微量分析技術", ぶんせき, 10, p.408-411 (2018)
- 2) 江坂 文孝, "表面分析", エキスパート応用化学シリーズ; 機器分析, p.119-135 (2015)

受賞（平成 27 年～平成 30 年）：

- 1) .