



Charles D Kolstad

Senior Fellow at the Stanford Institute for Economic Policy Research and at the Precourt Institute for Energy

 Curriculum Vitae available Online

Bio

BIO

[OFFICE HOURS: Email for appointment--Room 235, SIEPR/Gunn Building, 366 Galvez St.]

Prof. Charles D. Kolstad is an energy and environmental economist with a research focus on regulation. Much of his applied work is in the area of climate change and energy markets. He has been a Convening Lead Author for the Intergovernmental Panel on Climate Change (co-recipient of the 2007 Nobel Peace Prize), is a founding Co-Editor of the Oxford University Press journal *Review of Environmental Economics & Policy* and has served on many advisory boards. He is a former president of the Association of Environmental and Resource Economists (AERE).

At Stanford, in addition to his affiliation with the Department of Economics, Prof. Kolstad holds senior fellow appointments in the Precourt Institute for Energy (PIE), the Stanford Institute for Economic Policy Research (SIEPR) and the Woods Institute for the Environment. Prior to joining Stanford in 2012, Prof. Kolstad was on the faculty of the University of California, Santa Barbara, where he was a Bren Distinguished Professor of Environmental Economics, Chair of the Department of Economics and co-director of the system-wide University of California Center for Energy and Environmental Economics (UCE3). He is a University Fellow at Resources for the Future (Washington, DC), a Fellow of CESifo (Munich) and a Research Associate at the National Bureau of Economic Research (Cambridge, MA).

PhD students who wish to study with him (or another Stanford professor in the field of environmental, resource or energy economics) should first apply to a degree-granting department or program at Stanford (such as Economics, Management Science & Engineering, the Graduate School of Business or the Emmet Interdisciplinary Program in Environment and Resources), mentioning my name (no need to contact me in advance). See further information in the link at the side of this page ("Info for Prospective PhD Students").

At Stanford, Prof. Kolstad is affiliated with:

Department of Economics

Emmet Interdisciplinary Program in Energy and Resources (E-IPER)

Stanford Environmental and Energy Policy Analysis Center (SEEPAC)

Precourt Institute for Energy (PIE)

Stanford Institute for Economic Policy Research (SIEPR)

Woods Institute for the Environment

ACADEMIC APPOINTMENTS

- Senior Fellow, Stanford Institute for Economic Policy Research

- Senior Fellow, Precourt Institute for Energy

HONORS AND AWARDS

- Fellow, Association of Environmental and Resource Economists (AERE) (2009)

LINKS

- Kolstad Hi Res Photo @ Berkeley: <http://www.stanford.edu/~ckolstad/HmPg/Kolstad.Berkeley.jpg>
- Textbook Info: <http://www.stanford.edu/~ckolstad/HmPg/Textbooks.pdf>
- Info for Prospective PhD Students: <http://www.stanford.edu/~ckolstad/HmPg/InfoPhD.htm>
- IPCC Chapter 3: http://www2.bren.ucsb.edu/~kolstad/publications/pdf/WGIII_AR5_Ch03.pdf
- Kolstad Hi Res Photo @ SEEPAC event: <http://www.stanford.edu/~ckolstad/HmPg/Kolstad.SEEPACReception.2015.jpg>
- Kolstad Hi Res Photo @ UCLA: <http://www.stanford.edu/~ckolstad/HmPg/Kolstad.UCLA.jpg>
- Info for Prospective Postdocs: <http://www.stanford.edu/~ckolstad/HmPg/Postdocs.pdf>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research interests are broadly in environmental economics and related areas of industrial organization and public economics. My policy-related focus within these fields is climate change and energy markets.

I currently have several projects related to uncertainty and learning in strategic contexts regarding the provision of public goods. For the most part, the application is international environmental agreements. This work is primarily theoretical, though with some empirical and experimental work to validate and illuminate theory. I also have research interests in energy economics (particularly regulation) and other dimensions of the economics of climate change.

I welcome new PhD students who wish to study with me. Typically, my students train to be environmental or resource economists, which means they receive strong training in economics. At Stanford this means successfully taking the first year PhD sequences in microeconomics (Econ 202-204) and econometrics (Econ 270-272) offered by the Department of Economics. In addition, students should take the PhD classes Economics 250 (Environmental Economics) and 251 (Resource and Energy Economics). This is a minimum and other coursework would depend on student interest and needs. Strong preparation in math is essential.

There are a number of PhD programs at Stanford that are appropriate for someone seeking training as an environmental economist. In addition to the Department of Economics, there are several other departments in which students may apply and matriculate, including the Emmet Interdisciplinary Program in Environment and Resources (E-IPER).

Working Papers

Teaching

COURSES

2017-18

- Introduction to Resource, Energy and Environmental Economics: ENVRES 300 (Aut)
- Natural Resource and Energy Economics: ECON 251 (Win)

2016-17

- Introduction to Resource, Energy and Environmental Economics: ENVRES 300 (Aut)

2015-16

- Introduction to Resource, Energy and Environmental Economics: ENVRES 300 (Aut)
- Natural Resource and Energy Economics: ECON 251 (Win)

2014-15

- Introduction to Resource, Energy and Environmental Economics: ENVRES 300 (Aut)
- Natural Resource and Energy Economics: ECON 251 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Melanie Craxton, Maria Roumpani

Doctoral Dissertation Co-Advisor (AC)

Casey Maue

Doctoral (Program)

Marissa Childs, Chikara Onda

Publications

PUBLICATIONS

- **Reforming the U.S. coal leasing program.** *Science*
Gillingham, K., Bushnell, J., Fowlie, M., Greenstone, M., Kolstad, C., Krupnick, A., Morris, A., Schmalensee, R., Stock, J.
2016; 354 (6316): 1096-1098
- **CLIMATE ECONOMICS. Opportunities for advances in climate change economics.** *Science*
Burke, M., Craxton, M., Kolstad, C. D., ONDA, C., Allcott, H., Baker, E., Barrage, L., Carson, R., Gillingham, K., Graff-Zivin, J., Greenstone, M., Hallegatte, S., Hanemann, et al
2016; 352 (6283): 292-293
- **CLIMATE CHANGE. The IPCC at a crossroads: Opportunities for reform.** *Science*
Carraro, C., Edenhofer, O., Flachsland, C., Kolstad, C., Stavins, R., Stowe, R.
2015; 350 (6256): 34-35
- **Environmental economics. An economic perspective on the EPA's Clean Power Plan.** *Science*
Fowlie, M., Goulder, L., Kotchen, M., Borenstein, S., Bushnell, J., Davis, L., Greenstone, M., Kolstad, C., Knittel, C., Stavins, R., Wara, M., Wolak, F., Wolfram, et al
2014; 346 (6211): 815-816
- **Social Economic and Ethical Concepts and Methods** *Climate Change 2014: Mitigation of Climate Change*
Kolstad, C. D., et al
Cambridge University Press.2014
- **Bridging Reality and the Theory of International Environmental Agreements** *Climate Change and Common Sense: Essays in Honour of Tom Schelling*
Kolstad, C. D.,
Oxford University Press.2012: 61-74
- **Regulatory Choice with Pollution and Innovation** *The Design and Implementation of US Climate Policy*
Kostad, C.
University of Chicago Press.2012: 65-74
- **Economic impacts of climate change on California agriculture** *CLIMATIC CHANGE*
Deschenes, O., Kolstad, C.
2011; 109: 365-386

- **Uncertainty, Learning and Heterogeneity in International Environmental Agreements** *ENVIRONMENTAL & RESOURCE ECONOMICS*
Kolstad, C. D., Ulph, A.
2011; 50 (3): 389-403
- **Intermediate Environmental Economics**
Kolstad, C. D.
Oxford University Press.2011
- **Who Pays a Price on Carbon?** *ENVIRONMENTAL & RESOURCE ECONOMICS*
Grainger, C. A., Kolstad, C. D.
2010; 46 (3): 359-376
- **Environmental Economics**
Kolstad, C. D.
Oxford University Press.2010
- **Distribution and Climate Change Policies** *Climate Change Policies: Global Challenges and Future Prospects*
Kolstad, C. D., Grainger, C.
2010
- **Equity, Heterogeneity and International Environmental Agreements** *B E JOURNAL OF ECONOMIC ANALYSIS & POLICY*
Kolstad, C. D.
2010; 10 (2)
- **Is a Cap-and-Trade System a Disguised Tax?** *Harvard College Economics Review*
Kolstad, C. D.
2009; 3 (2): 22-23
- **Restructuring Federal Climate Research to Meet the Challenges of Climate Change**
Kolstad, C. D., Ramanathan, V., et al
The National Academies Press.2009
- **Less Traffic, A Better Life** *Sacramento Bee*
Kolstad, C. D.
2009
- **A Statement on the Appropriate Role for Research and Development in Climate Policy** *The Economists' Voice*
Arrow, K., Cohen, L. R., David, P. A., Hahn, R. W., Kolstad, C. D., Lane, L. L., Montgomery, W. D., Nelson, R. R., Noll, R. G., Smith, A. E.
2009; 6 (1)
- **When Carbon is Priced, Who Ultimately Pays?** *VOX*
Kolstad, C. D.
2009
- **Learning and international environmental agreements** *CLIMATIC CHANGE*
Kolstad, C., Ulph, A.
2008; 89 (1-2): 125-141
- **Beyond the Market Advisory Committee: Proceedings from a Workshop held at Stanford University**
Kolstad, C. D., Ahoobim, O., Burger, N., Crainger, C., MacRae, S.
2008
- **Researching preferences, valuation and hypothetical bias** *ENVIRONMENTAL & RESOURCE ECONOMICS*
Guzman, R. M., Kolstad, C. D.
2007; 37 (3): 465-487
- **Systematic uncertainty in self-enforcing international environmental agreements** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
Kolstad, C. D.
2007; 53 (1): 68-79

- **Prescriptive Environmental Regulations versus Market - Based Incentives** *Moving to Markets in Environmental Regulation*
Kolstad, C. D., Freeman, J.
Oxford University Press.2007
- **Evaluating Progress of the U.S. Climate Change Science Program: Methods and Preliminary Results**
Kolstad, C. D., Ramanathan, V., et al
National Academies Press.2007
- **Learning and climate change** *CLIMATE POLICY*
O'Neill, B. C., Crutzen, P., Gruebler, A., Duong, M. H., Keller, K., Kolstad, C., Koomey, J., Lange, A., Obersteiner, M., Oppenheimer, M., Pepper, W., Sanderson, W., Schlesinger, et al
2006; 6 (5): 585-589
- **Interpreting Estimated Environmental Kuznets Curves for Greenhouse Gases** *The Journal of Environment & Development*
Kolstad, C. D.
2006; 15: 42-49
- **Adjustment costs from environmental change** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
Kelly, D. L., Kolstad, C. D., Mitchell, G. T.
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- **Piercing the veil of uncertainty in transboundary pollution agreements** *International Conference on Risk and Uncertainty in Environmental and Resource Economics*
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- **The Simple Analytics of Greenhouse Gas Intensity Reduction Targets** *Energy Policy*
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- **The Economics of Climate Policy** *Handbook of Environmental Economics*
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- **Climate Change Policy Viewed from the U.S. A. and the Role of Intensity Targets** *Emissions Trading for Climate Policy : US and European Perspectives*
Kolstad, C. D.
Cambridge University Press.2005: 96-113
- **Environmental Protection in a Knowledge - Based Economy** *Proceedings , Delhi Sustainable Development Summit*,
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- **Do lax environmental regulations attract foreign investment?** *ENVIRONMENTAL & RESOURCE ECONOMICS*
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- **Economic Damage from Water Resource Contamination** *Southwest Journal of Hydrology*
Kolstad, C. D.
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- **Malthus and climate change: Betting on a stable population** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
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- **Is coal desulphurisation worthwhile? Evidence from the market** *ENERGY POLICY*
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- **Comment on 'Environmental Policy and Firm Behavior: Abatement Investment and Location Decisions under Uncertainty and Irreversibility' by Anastasios Xepapadeas** *Behavioral and Distributional Effects of Environmental Policy*

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- Kolstad, C. D.
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- **COP6: Observations of an Interested Bystander** *Energy Policies and Markets: New Trends or Old Cycles?*
Kolstad, C. D.
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 - **Solving Infinite Horizon Growth Models with an Environmental Sector** *Computational Economics*
Kolstad, C. D., Kelly, D.
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 - **Valuing beach recreation lost in environmental accidents** *JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT-ASCE*
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 - **Energy and depletable resources: Economics and policy, 1973-1998** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
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2000; 39 (3): 282-305
 - **Spatial Environmental and Resource Economics: Selected Essays of Charles D. Kolstad**
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 - **Information and the divergence between willingness to accept and willingness to pay** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
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 - **Bayesian learning, growth, and pollution** *JOURNAL OF ECONOMIC DYNAMICS & CONTROL*
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1996

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- **The Climate Change Footprint: Will We See It Before It Is Upon Us?** *IIASA*
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1996
- **FOREIGN DIRECT-INVESTMENT, EXCHANGE-RATE VARIABILITY AND DEMAND UNCERTAINTY** *INTERNATIONAL ECONOMIC REVIEW*
Goldberg, L. S., Kolstad, C. D.
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- **Normas Anticontaminación: Enfoques Pasados e Innovaciones," [Regulating Pollution: Past Approaches and Innovations]** *Economía del Medio Ambiente en América Latina [The Economics of Ambient Environment in Latin America]*
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Lee, J. K., Kolstad, C. D.
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- **HOTELLING RENTS IN HOTELLING SPACE - PRODUCT DIFFERENTIATION IN EXHAUSTIBLE RESOURCE MARKETS** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
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1994; 26 (2): 163-180
- **Comment on 'Energy Demand and Supply in the Developing World 1990 - 2020,' by Churchill** *Proceedings 1993 World Bank Annual Conference on Development Economics*
Kolstad, C. D.
1994
- **The Timing of CO2 Control in the Face of Uncertainty and Learning** *International Environmental Economics*
Kolstad, C. D.
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- **George Bush vs. Al Gore: Irreversibilities in Greenhouse Gas Accumulation and Emission Control Investment** *Energy Policy* ,
Kolstad, C. D.
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- **Mitigating Climate Change Impacts: The Conflicting Effects of Irreversibilities in CO2 Accumulation and Emission Control Investment** *IIASA*
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- **Environmental Protection and Economic Reform in Russia** *EPAT/MUCIA Policy Brief*
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- **The Law and Economics of Hazardous Materials Transportation: Regulating Harm by Administrative Agency and by Tort Liability** *Transportation of Hazardous Materials: Issues in Law, Social Science and Engineering*
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- **Measuring the Energy Efficiency and Productivity Impacts of Embodied Technical Change** *Energy Journal*
Kolstad, C. D., Berndt, E., Lee, J.
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- **Looking vs. Leaping: The Timing of CO2 Control in the Face of Uncertainty and Learning** *IASA*
Kolstad, C. D.
1993
- **Natural Resource Use and the Environment** *Handbook of Natural Resources and Energy Economics*
Kolstad, C. D.
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- **Buying Energy and Non-Fuel Minerals: Final, Derived and Speculative Demand** *Handbook of Natural Resources and Energy Economics* ,
Kolstad, C. D., Arrow, K. J., Weiner R.
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- **Efficiency and the Non-enforcement of Penalties** *Hoover Institution Working Paper E-92-2*
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- **From Stalin to Yeltsin: Perestroika in US Environmental Policy**
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- **COMPUTING COURNOT-NASH EQUILIBRIA** *OPERATIONS RESEARCH*
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- **A MODEL OF HOMOGENEOUS INPUT DEMAND UNDER PRICE UNCERTAINTY** *AMERICAN ECONOMIC REVIEW*
WOLAK, F. A., Kolstad, C. D.
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- **Price Formation in International Coal Trade** *Proceedings Coaltrans 91*
Kolstad, C. D.
1991
- **Book Review: Recent Modelling Approaches in Applied Energy Economics** *Energy Journal*
Kolstad, C. D.
1991; 12: 165-167
- **A Framework for Exploring Cost Effective CO2 Control Paths: Discussant Comments** *Proceedings of the Workshop on Economic/Energy/Environmental Modeling for Climate Policy Analysis*
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- **Measuring the Demand for Environmental Quality**
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- **Environmental Demand Theory** *Measuring the Demand for Environmental Quality*
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- **DERIVATIVE EVALUATION AND COMPUTATIONAL EXPERIENCE WITH LARGE BILEVEL MATHEMATICAL PROGRAMS** *JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS*
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- **Ex Post Liability for Harm vs. Ex Ante Safety Regulation: Substitutes or Complements** *American Economic Review*
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WOLAK, F. A., Kolstad, C. D.
1988; 10 (4): 293-314
 - **Book Review: World Coal: Economics, Policies and Prospects** *Energy Policy*
Kolstad, C. D.
1988; 16: 328
 - **Measuring Relative Market Power in the Western US Coal Market Using Shapley Values** *Resources and Energy*
Kolstad, C. D., Wolak, F.
1988; 10: 293-314
 - **A Constructive Proof of a Theorem on the Uniqueness of Cournot Equilibria** *University of Illinois BEBR working paper No. 1444*
Kolstad, C. D.
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- **IMPERFECTLY COMPETITIVE EQUILIBRIA IN INTERNATIONAL COMMODITY-MARKETS** *AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS*
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- **Using Shapley Values to Measure Market Power in the Western US Coal Market** *Proceedings, 1986 North American Meeting of Int'l Assn. of Energy Economists*
Kolstad, C. D., Wolak, F.
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- **Short-Run and Long-Run Industrial Demand for Energy: Recent Evidence from Seven Major OECD Countries** *Proceedings, Eighth Annual International Conference of International Association of Energy Economists*
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1986
- **A Short-Run Capital-Labor-Energy Model of Fuel Demand in the Manufacturing Sector of Seven Major OECD Countries** *OPEC Review*
Kolstad, C. D., Bopp, A., Pendley, R., Wolak, F.
1986; 10 (2): 179-214
- **Marketable Permits vs. Emission Fees: Uncertain Costs, Damage and Product Demand** *Univ. Illinois BEBR Working Paper No. 1223*
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- **The Effect of Producer and Consumer Behavior on Prices and Trade in the International Steam Coal Market** *Coal Consumers Conference*
Kolstad, C. D.
1986
- **A Review of the Literature on Bi-level Mathematical Programming** *Los Alamos National Laboratory Report LA-10284-MS*
Kolstad, C. D.

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1985
- **A Capital-Labor-Energy Model of Fuel Demand in the Manufacturing Sector of Seven Major OECD Countries** *Proceedings, Seventh Annual International Conference of International Association of Energy Economists*
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Kolstad, C. D., WOLAK, F. A.
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Kolstad, C. D., Burris, A., Trocki, L., Yeaman, M.
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- **THE EFFECT OF MARKET CONDUCT ON INTERNATIONAL STEAM COAL TRADE** *EUROPEAN ECONOMIC REVIEW*
Kolstad, C. D., ABBEY, D. S.
1984; 24 (1): 39-59
- **Efficiency and Equity in Acid Rain Regulation** *Proceedings, Annual North American Meeting of International Association of Energy Economists*
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- **Evaluation of the St. Lucia Geothermal Resource: Macroeconomic Models** *Los Alamos National Laboratory Report LA-10212-MS*
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