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研究課題名（和文）　ダストから太陽系惑星に至る物質進化の実験および理論的研究

研究課題名（英文）　**Experimental and theoretical studies of the evolution from dust to exoplanets**

研究代表者
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研究成果の概要：
惑星系円盤におけるダストの衝突進化と熱進化の素過程，観測結果を読み解くうえで重要な光学に関する研究，ダスト生成とその後続解析実験，ダスト衝突実験，氷表面における分子反応等，物質進化の総合的研究を展開した．加えて，この分野の研究基盤形成にも貢献した．研究グループの交流を促進し，国内の関連研究グループの組織化を図り，研究コミュニティー形成を積極的に推進した．

交付額

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２００４年度	65,100,000	0	65,100,000
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研究分野：惑星科学
科研費の分科・細目：天文学・天文学
キーワード：ダスト，太陽系外惑星，原始惑星系円盤，ダスト，物質進化，衝突，結晶化，表面反応

１．研究開始当初の背景

物質進化の観点からの太陽系外惑星系の系統的な研究は未開拓の分野である．わが国では長年にわたる Grain Formation Workshop の開催を通じて，優れた研究グループが育ってきた． ダスト生成実験および理論，微粒子の物性研究や赤外分光，惑星形成における氷や有機物の役割の研究で特筆すべき成果をあげてきた研究者からなる組織を構築し．ダストから惑星形成に至る物質進化の総合的研究を展開する素地が整っている．系外惑星科学という新しい分野の形成に寄与する素地が十分整っている．

２．研究の目的

室内実験と理論的研究の密接な連携によって，

・物質進化の観点から惑星系形成論の普遍化に寄与する．
・原始惑星系円盤におけるダストから惑星への成長過程の解明や系外惑星の発
見につながる様々な観測情報を読み解く物質科学的ツールを開発する．

３．研究の方法

理論と実験の密接な連携によって系外惑星科学において物質進化の観点からの研究を展開した．加えて，観測との連携も積極的に推進し，観測結果のモデリング，観測の解析の基礎となるデータの提供を行った．

さらにこの分野の振興のため，研究基盤確立の一環として，研究グループの交流を促進し，国内の関連研究グループの組織化を図り，

研究コミュニティー形成を積極的に推進した．その結果，衝突実験コミュニティーの育成，分野を超えた宇宙鉱物学の展開，地球惑星関連学会連合体会における宇宙惑星固体物質セッションの創立，等を行った．

４．研究成果

本研究の5年間の成果のまとめを日本天文学会誌に出版した(天文月報 第102巻，2号，pp. 118-126, 2009)．関係する論文を含め，計111編の論文を出版した（印刷中を含む）５では特に密接に関係する論文に絞りリストした．

５．主な発表論文等

（研究代表者、研究分担者及び連携研究者には下線）

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